■Environmental Science & Engineering, Inc.



DRAFT EXPANDED SITE INVESTIGATION REPORT CD LANDFILL Naval Air Station Norfolk, Virginia

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EXECUTIVE SUMMARY

An expanded Site Investigation (SI) was performed at the CD Landfill to determine the environmental impacts the facility may have imposed on the soils and groundwater. The expanded SI is being conducted by Environmental Science & Engineering, Inc. (ESE) under contract No. N62470-90-D-7661 for the United States Navy, Atlantic Division, Naval Facilities Engineering Commands (LANTNAVFACENGCOM).

Site History

CD Landfill is located on the east side of Hampton Boulevard, 1.5 mile south of the Taussig Boulevard intersection. The study site was purchased in 1974 for construction debris and inert solids disposal; asbestos was also deposited there. Landfill operations began in 1974 and ended in 1987. The sandblasting grit was analyzed in 1981, classified as hazardous waste, and no longer deposited in the landfill. During 1979, a 5-acre area was operated under a permit (No. 286) from the Virginia Department of Health (DOH) to allow disposal of construction and inert solids excluding fly ash, incinerator residues, chemicals, and asbestos. The Navy ceased waste disposal at the facility on 15 June 1987, and has been pursuing final closure since then.

Since 1982, two investigations (Initial Assessment Study (IAS) and Confirmation Study) were performed at the site to evaluate the existence of contaminants that may impact the health and safety of the environment. The only parameter analyzed in the sediment and surface waters was cadmium.

Site Condition

Several Naval support facilities such as Naval warehouses, pass offices, tour offices, and air strip, etc. are located within a 1-mile radius of the vegetated landfill. A small private residential neighborhood (Glenwood Park) and Naval housing are also located nearby. According to available records, the study site was used only for landfilling operations between 1974 and 1987.

Site Investigation

Expanded SI activities began in February 1990 and continued through June 1991. The investigation included subsurface soil, sediment, surface water, and groundwater investigations.

Subsurface soil and sediment samples were collected in Round 1 of the two-event sampling program. Twelve subsurface soil samples were collected and analyzed from the six soil borings (MW-1 through MW-6) at two intervals, 0-2 feet and approximately 7-9 feet. In addition, soil samples were collected every 5 feet (to 25 feet) for soil descriptions. Five sediment samples were also collected in separate locations from the existing drainage ditch. Both media were analyzed for lead, iron, cadmium, pH, total organic halogens (TOX), and moisture.

Six shallow (25-foot) groundwater monitor wells (MW-1 through MW-6) were installed in the same locations as the soil borings. Groundwater samples were collected during both rounds of the sampling program. Five surface water samples were collected in the drainage ditch during both sampling events. Five of the originally planned 10 samples were not collected because the recommended location was dry. Both media (groundwater and surface water) were analyzed for cadmium, and groundwater indicator and quality parameters. The indicator parameters are total organic halogens (TOX), total organic carbon (TOC), pH, and specific conductivity. The quality parameters are lead, iron, sodium, and hardness.

Geologic and Hydrogeologic Assessment Results

The CD Landfill is located within the Atlantic Coastal Plain Physiographic Province. Two major geologic formations underlie the site. The uppermost Columbia Group is characterized by gravels, sands, silts, and clays with some shell fragments; it is heterogeneous and varies in thickness between 20 and 50 feet. The underlying Yorktown Formation is characterized by gravels and thick shell beds and ranges in thickness from 300 to 400 feet. The Yorktown was not encountered at the study area. A confining layer

is thought to exist between the two formations. Although a clay unit was encountered at approximate 23 feet during the field investigation, it was not penetrated to avoid the possibility of contaminating the lower aquifer.

The CD Landfill is underlain by yellow-brown, gray, and black silty sands with varying amounts of clay. (The uppermost deposits are most likely representative of the fill operation used to create the site, rather than Columbia Group lithology.)

During this investigation, only one aquifer was penetrated at the study area: an unconfined, water table aquifer situated within the fill deposits and deposits of the Columbia Group. Groundwater flows to the east and northeast across the site. The hydraulic gradient is shallow, averaging 0.0043 ft/ft. Aquifer recharge is by predominately from infiltration and possibly by regional groundwater flow.

Contaminant Evaluation Results

Soils

Soil contamination at the site appears to be limited to cadmium, iron, and lead, although TOX concentrations were present at moderate levels (80 mg/kg). The concentration levels are extremely variable; it is difficult to correlate these data to determine contaminants point sources.

Extremely high iron concentrations are widespread across the site, ranging from 1,934 parts per million (ppm) to 142,293 ppm. Low to moderate cadmium concentrations ranged from 0 to 28.4 ppm, and lead ranged from 0 to 4140 ppm. No guidelines currently exist for remedial action for these parameters in soils.

Sediment

Except for sediment location SE-5, cadmium and lead impact appear minimal. The highest concentrations were detected is SE-5, which contained 4.9 ppm cadmium and 145 ppm lead. In addition, the highest TOX and iron concentrations were 1.4 ppm and 93,700 ppm, respectively. Concentrations appear to increase to the east (except for in SE-5), suggesting that offsite migration is occurring via surface water.

Groundwater

The groundwater at the landfill has not been significantly impacted by cadmium. However, several parameters did exceed the recommended standards or guidelines set forth by the Virgnia Water Control Board (VWCB), including lead, iron, TOC, hardness, and sodium. Lead was exceeded at locations MW-2, MW-4, MW-5, and MW-6; iron was widespread in all sampling locations; total organic carbon (TOC) was exceeded at locations MW-2 and MW-4; hardness was exceeded in all sampling locations; and sodium was exceeded in MW-4. TOX is widespread across the site; however, no guideline or standard exists for comparison.

Surface Water

TOX, TOC, sodium, and iron were detected in every sample. The highest concentration was iron at 38,100 parts per billion (ppb) (Round 2), and the second highest was TOX at 420 ppb (Round 1); all iron concentrations exceeded VWCB standards. Due to the constant recharge from offsite and the lack of background samples, the nature and extent of contaminants in the surface water remains inconclusive.

Recommendations

Recommendations were broken down into three separate categories:

Unpermitted landfill:

 Determine the solid waste boundary and contaminant point sources by geophysical surveys.

- Continue quarterly sampling and analysis of groundwater from existing wells
 according to Part V of the Phase I requirements of the Solid Waste Management
 Regulations (SWMR).
- Perform additional surface soil sampling to evaluate the risk assessment.
- Prepare and submit a closure plan.

Permitted landfill:

- Determine the solid waste boundaries and contaminant point sources by geophysical surveys. The surveys will assist in locating the monitor wells and soil borings.
- Install a minimum of three downgradient and one upgradient groundwater monitor wells.
- Conduct quarterly sampling and analysis of groundwater from the above wells according to Part V of Phase I of the SWMR.
- Prepare and submit a closure plan for the 5-acre landfill.

RI/FS

- Identify all solid waste boundaries and contaminant point sources.
- Install monitor wells. Sample surface soil, subsurface soil borings, and groundwater to determine the degree and extent of onsite and offsite contamination.
- Following completion of the site investigation, perform a risk assessment to determine the potential risk to human health and the environment.

1.0 INTRODUCTION

1.1 Purpose of Report

In response to the Superfund Amendments and Reauthorization Act (SARA) of 1986, the Navy has changed its program to follow SARA's guidelines, which requires each Federal facility listed on the Federal Hazardous Waste Compliance Docket to follow the rules, regulations, and criteria established by the Environmental Protection Agency (EPA). CD Landfill was one of the sites listed on the Federal Hazardous Waste Compliance Docket. Therefore, under the Navy's new program, Environmental Science & Engineering, Inc. (ESE) has been contracted to perform an expanded Site Investigation (SI) to provide recommendations to develop a final Remedial Investigation/Feasibility Study (RI/FS). In addition, ESE initiated a groundwater monitoring program that complies with Phase I of the Virginia Department of Waste Management (VDWM) state landfill closure requirements.

1.2 Site History

Part of the Sewells Point Naval Complex, CD Landfill is located on the east side of Hampton Boulevard, 0.5 mile south of the Taussig Boulevard intersection (Figure 1-1). When the Navy purchased the site in 1974 from Norfolk and Western Railway Company (Navy, 1974), they began landfilling construction debris, ash, and sandblasting grit began that same year. The ash was generated by a salvage fuel boiler and power plants on the Norfolk Naval Base, and the sandblasting grit came from the Naval Aviation Depot (Naval Energy and Environmental Support Activity (NEESA), 1983). Figure 1-2 chronologically illustrates the timing and placement of the fill.

Fill was placed in the eastern half of the site from 1974 to 1979, and a small portion in the southeast corner of the site was removed in 1979 to allow for a runway expansion project. Filling operations began and ended in the western half of the site from 1979 to 1987, respectively.

The Virginia Department of Health (DOH) granted the Norfolk Naval station a permit (No. 286) in November 1979 to operate a 5-acre parcel to receive non-hazardous wastes (e.g., construction debris and non-biodegradable waste). The permit excluded fly ash, incinerator residues, chemicals, and asbestos, although the site continued to receive sandblasting grit until 1981 when the material was tested and classified as a hazardous waste. Materials such as demolition debris and other inert waste continued to be deposited until landfill operations ceased on 15 June 1987. The Navy then began to follow procedures to close the 5-acre permitted portion of the landfill in accordance with state regulations. The closure plan included reducing infiltration and minimizing surface erosion by capping the permitted parcel.

1.3 Previous Investigations

The Navy Assessment and Control of Installation Pollutants (NACIP) Program was promulgated in 1980 to systematically identify, assess, and control contamination from past hazardous material operations that pose a potential threat to human health or the environment. The Initial Assessment Study (IAS) was conducted as the first phase of the NACIP Program to collect and evaluate evidence indicating the existence of pollutants that may have contaminated sites at the Sewells Point Naval Complex and that may pose an imminent health hazard to people located on or off the installation. The IAS was conducted prior to the enactment of SARA, but fulfills the requirement for each Federal facility listed on the Federal Agency Hazardous Waste Compliance Docket to perform a preliminary assessment.

The IAS was conducted in May 1982. Significant quantities of cadmium dust were identified as having been deposited in the landfill from 1974 until 1981. This material was tested and exceeded the maximum contaminant level for cadmium and was classified as hazardous waste. To determine if offsite migration was occurring, recommendations were made to sample the existing contaminant migration pathway: the drainage ditch. Two locations were recommended to sample for cadmium in the surface water and sediment.

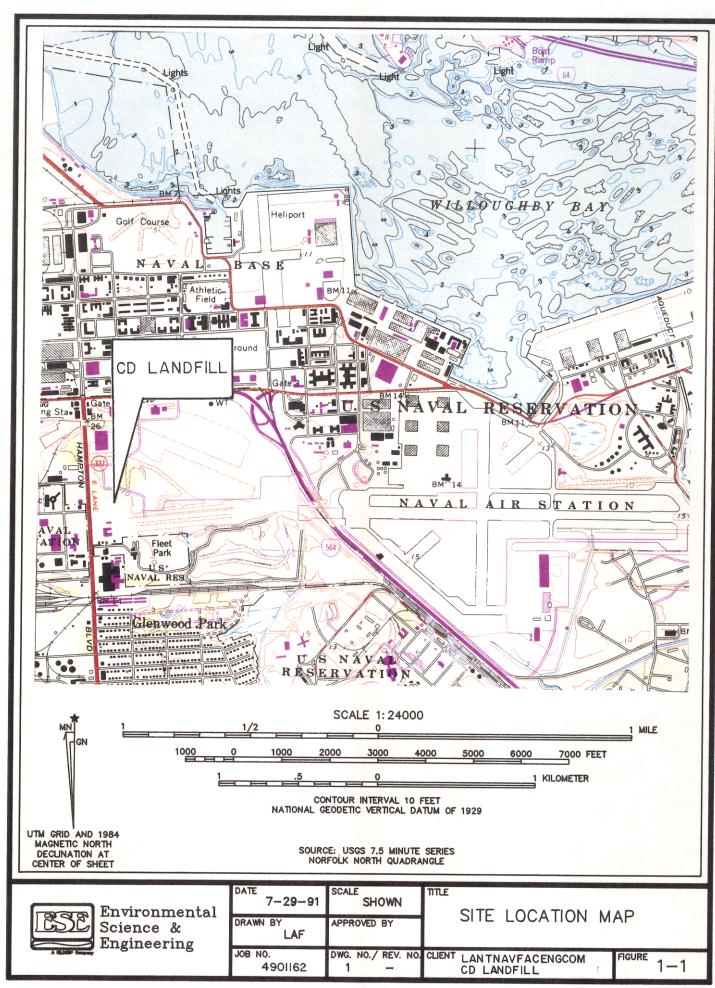
Subsequent to the IAS, the NACIP Program was redesigned as the Installation Restoration Program (IRP). The terminology and structure of the IRP were changed to conform to SARA. The confirmation study (LANTNAVFACENGCOM, 1983) was designed to verify the existence of contamination but it does not meet full RI requirements.

The confirmation study was conducted in January 1983. Surface water and sediment samples were collected at the three locations shown on Figure 1-3. The drainage ditches that border the site flow to the east, so two downgradient samples were collected quarterly, and one upgradient background sample was collected. Quarterly sampling continued until November 1983, and semi-annual sampling was performed until 1985. Analytical results from the confirmation study are presented in Appendix A.

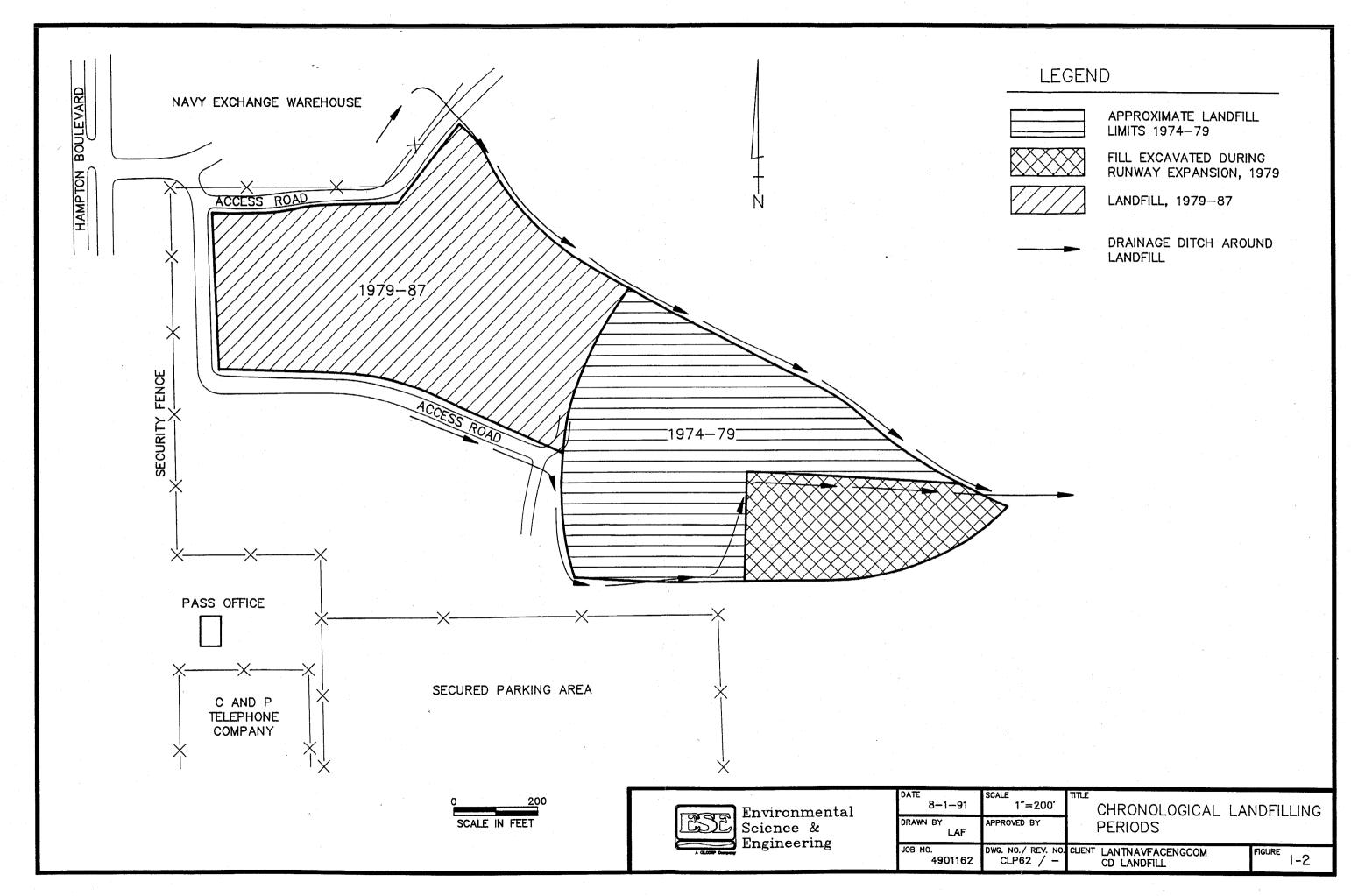
Cadmium was the only parameter tested during the study. Concentrations in the surface water ranged from less than 0.01 milligrams/liter (mg/l) on 1 January 1983 and 31 October 1983, to 0.02 mg/l on 29 April 1983 and 13 April 1984. Sediment concentrations ranged from 2 micrograms/gram (μ g/g) on 31 October 1984 to 115 μ g/g on 31 October 1983. Tables 1-1 and 1-2 summarize the surface water and sediment concentrations, detected during the confirmation studies conducted in 1983.

No guidelines existed for cadmium in non-drinking surface waters and sediments at the time of the evaluation. However, compared to existing Virginia Surface Water Drinking Standards (0.01 mg/l), 70 percent of the surface water samples were measured above standards (Table 1-1). Cadmium concentrations within the sediment were compared with EPA Region V guidelines for soil (6 μ g/g). Approximately 70 percent of the sediment samples collected were considered heavily polluted soils (Table 1-2).

Based on past records and laboratory analysis during the confirmation study, two recommendations were considered for CD Landfill: no-action and containment. The no-action alternative was considered for the pre-1979 fill area because any future construction activities would increase the exposure risk of metals and asbestos to the workers and the environment. The permitted fill area was recommended for containment. The Navy submitted plans in 1987 to close the 5-acre area as a construction/demolition/debris landfill.



1.770 NAIL



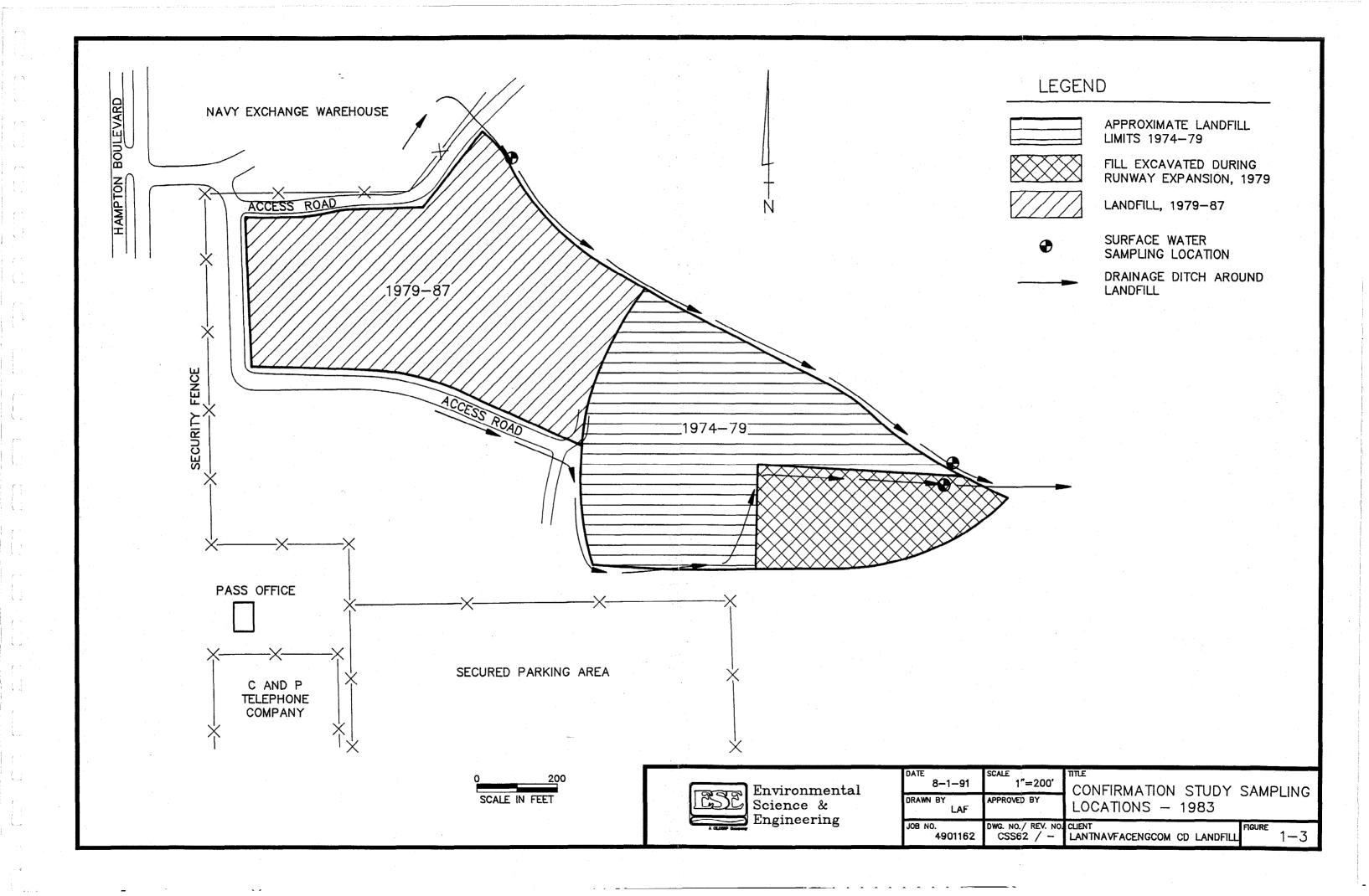


Table 1-1

Cadmium Concentration in Surface Water (mg/l)

Sample Date	Sample Location		
	Upstream	North Branch	South Branch
01/26/83	< 0.01	0.01	< 0.01
04/29/83	-	0.02	0.01
07/07/83		- (1)	- (1)
10/31/83	<u>-</u>	< 0.01	< 0.01
04/13/84	-	0.02	0.02
10/31/84	<u>-</u>	- (1)	- (1)
12/02/85*	-	0.014	0.018

Note: No surface water flow in ditches at time of sampling

Table 1-2 ${\it Cadmium \ Concentration \ in \ Sediment \ (Dry \ Weight), \ \mu g/g }$

Sample Date			
	Upstream	North Branch	South Branch
01/26/83	2.43	9.64	2.92
04/29/83	<u>.</u>	9.37	4.88
07/07/83	<u>-</u>	9.85	14.3
10/31/83	-	115	0.71
04/13/84	-	8.17	1.24
10/31/84	-	26.4	7.46
12/02/85*	<u>-</u>	16	2
EP toxicity, Cd, μg/l		321	24

^{*} Date sample received by laboratory

^{*} Date sample received by laboratory

2.0 SITE CONDITIONS

The site and meteorological characteristics of the study area were evaluated using a variety of office and field methods. Topographic maps were readily available, as were records concerning local climates, previous land use, etc.

2.1 Demography

Several residential communities are located within a 1-mile radius of the landfill, including both temporary and permanent quarters for Naval personnel, and a small private residential neighborhood of approximately 1500 residents called Glenwood Park (Commerce, 1983). The following Naval facilities support Naval personnel and are located within the immediate vicinity of CD Landfill: warehouses and an exchange/commissary/dispensary complex to the north and northeast; an air station runway that borders the east; the pass office, fleet parking lot, and a recreational park to the south and southeast; and a base tour office and parking lots to the west.

2.2 Land Use

Land use was primarily for construction debris and inert waste disposal prior to June 1987; no other activities except grounds maintenance were recorded from 1987 to present. Only authorized personnel have access to the enclosed site. Available records or maps do not disclose the full areal extent of contaminant point sources or permitted and unpermitted landfill boundaries.

2.3 Climatology/Meteorology

The Norfolk area climate is classified as oceanic (Siudyla, et al., 1981); winters are relatively mild, and summers are warm and long. The temperatures rarely exceed 100°F or fall below 20°F, and average 78.6°F in July and 41.2 °F in January (Atlantic Division, Naval Facilities Engineering Command (LANDIVENGCOM), 1980b). The mean minimum and maximum temperatures are 50.5°F and 68°F.

The average precipitation is 44 inches per year and well distributed throughout the seasons. The portion of precipitation that occurs as snowfall during December and January averages 9.1 inches per year (LANDIVENGCOM, 1980b).

Wind direction is from the southwest in early winter, spring, and early summer. Wind velocities are normally less then 12 knots; the highest velocities occur at night and rarely exceed 20 knots. No site-specific meteorologic data were collected during this investigation.

3.0 SITE INVESTIGATIONS

3.1 Field Investigation Methods

The methods employed during the CD Landfill field investigation were selected to fill the data gaps in the previous investigations and to begin completing an expanded SI. In addition, ESE initiated a groundwater monitoring program to detect any contaminants migrating beyond the solid waste boundary, according to Phase I of VDWM state landfill closure requirements. An overview of the field activities follows, as outlined in the Work Plan and Sampling and Analysis Plan (ESE, November 1990).

These methods were used to determine if the site was releasing hazardous substances, pollutants, or contaminants into the environment that may require a removal action. The work included identifying and quantifying pollutant concentrations migrating offsite to accomplish the first half of quarterly groundwater monitoring according to VDWM landfill closure requirements.

3.1.1 Geological Investigation

To fully determine the nature and extent of contamination, the regional and local geology must be understood. In conjunction with available resources (United States Geological Survey (USGSs) maps, past records, etc.), site-specific field data are used to characterize substratum physical properties. This is vital in determining the geologic formations and water-bearing zones that underlie the site. Regional geology was determined using information available prior to the field investigation, assisting in determining the expected subsurface conditions and practical methods to be exercised during investigation.

Six exploratory borings were advanced to 25 feet using continuous-flight, 5-foot hollow-stem augers and an all-terrain vehicle (ATV) with a mounted drill rig. Soil samples were collected every 5 feet to describe the lithology of each boring by texture. The geologist field-classified each sample and logged it on dedicated log sheets (Appendix B). The soil boring locations, labeled MW-1 to MW-6, are shown on Figure 3-1.

3.1.2 Groundwater Investigation

Groundwater quality and site hydrogeology were determined to assist in evaluating offsite contaminant migration. Groundwater monitor wells were installed in the six borings described in Section 3.1.1; well locations were chosen to detect offsite contaminant migration. Four wells were installed downgradient to detect potential contaminant migration from the landfill (Figure 3-1), and two wells were installed upgradient to determine representative background levels. Horizontal hydraulic gradients were calculated by measuring static water levels at each well and then calculating their elevation relative to mean sea level (msl).

Six monitor wells were constructed of 2-inch ID, flush-joint, threaded polyvinyl chloride (PVC) well screen, riser, and casing. Figure 3-2 illustrates a typical monitor well construction diagram. A 0.01-inch slotted PVC well screen was used in each well. A sand pack (#2 Morie sand or equivalent) was placed around the slotted well screen to approximately 2 feet above the top of the screen, and a bentonite seal (minimum thickness of 1 foot) was placed on top of the sand pack. Finally, a grout mixture of two parts sand and one part cement, thoroughly mixed with the specified amount of potable water, was placed in the borehole to ensure a proper seal. Actual construction diagrams for each well are included in Appendix C.

All wells were developed a minimum of 24 hours following installation to remove fine-grained materials and any contamination that may have entered during construction. This was accomplished by removing the well volume three to five times by continuous low-yield pumping. All fluids generated from well development were discarded on the landfill surface, per the Navy's request.

A sampling program was designed to collect groundwater samples during two separate rounds. Round 1 was collected five days after well development, and Round 2 was collected 90 days later. Groundwater samples were collected from each of the six

shallow monitor wells. To evaluate groundwater quality, the following procedures were used to collect the samples:

- 1. Samples were collected a minimum of five days after development to allow the wells to reach equilibrium.
- 2. Immediately prior to collecting a sample, the static water level was measured below the top of the well PVC casing and recorded in the field notebook.
- 3. Wells were sampled according to degree of contamination: wells expected to be uncontaminated were sampled first, followed by those with potentially increasing levels of contamination.
- 4. Prior to collecting a sample, the volume of water in the well casing and annulus was purged three to five times until water temperature, specific conductivity, and pH stabilized. The total amount of fluid purged was measured and recorded.
- 5. During Round 1, one set of groundwater samples was filtered for metals only to determine the dissolved metal concentration in the groundwater. A set of unfiltered samples was also taken to compare the total metal concentration and the dissolved concentration.
- 6. A precleaned stainless steel submersible pump with dedicated Teflon® tubing was used to collect the filtered and unfiltered samples for the metals analysis. The samples for other parameters tested during this event were collected in a precleaned stainless steel bailer with dedicated Teflon® rope. Prior to collecting the water samples in the precleaned containers, the first filled bailer was discarded.

- 7. No filtered samples were collected for comparison during the second sampling round. Metal analytes, excluding iron, were not detected during the first sampling event.
- 8. Sampling equipment was decontaminated between sampling locations according to procedures outlined in Section 2.1.3 of the Sampling and Analysis Plan (ESE, 1990).

3.1.3 Surficial Investigation

3.1.3.1 Surface Water

During Round 1 and Round 2 of the sampling program, surface water was collected at five locations (Figure 3-1) to establish surface water quality characteristics, determine the nature of any contamination, and determine whether contaminants are surficially migrating offsite. The following sample collection procedures were used:

- 1. Samples were collected at one-half to two-thirds the depth of water, when possible.
- 2. A dedicated, precleaned container was used to collect the sample, which was then transferred to the appropriate container for analysis.
- 3. Downstream samples were collected first, upstream of the sampler's body.
- 4. Care was taken not to stir up bottom sediments prior to and during sampling.

Due to an insufficient volume of water, three water samples (rather than the five proposed) were collected during Round 1, and two water samples were collected during Round 2. Shortly after Round 1, a second effort to collect the water from the two dry

locations failed. However, additional water was collected from the same three locations for total organic halogens (TOX) and total organic carbon (TOC) analyses. A second attempt was not made after Round 2.

3.1.3.2 Sediment

Five sediment samples were collected during Round 1 at the same locations where the surface water was collected. The sediment samples were collected from the top 3 inches below the sediment surface with a precleaned stainless steel scoop decontaminated by the procedures outlined in Section 2.1.3 of the Sampling and Analysis Plan (ESE, 1990). Care was taken to collect and retain the "fines," which often contain the highest concentration of chemical constituents.

3.1.4 Wetlands Delineation

3.1.4.1 Methodology

The initial review of existing literature and the study area mapping proved inconclusive. The Soil Conservation Service (SCS) has not produced a soil survey for the City of Norfolk, and no site-specific information was available. Additionally, the USGS Norfolk North, Virginia topographic quadrangle did not depict any potential wetland areas on the site. The United States Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) quadrangle could not be obtained prior to the onsite investigation: the site consists of "made land" soils over the landfill. According to Navy sources, the present cover was completed in 1988. Large portions of the site are not level graded, including several larger mounds that vary in size and a somewhat centrally located area with many small hills and trenches (described as unlevel ground on Figure 3-3).

The three-parameter approach described in the "Federal Manual for Identifying and Delineating Jurisdictional Wetlands" (FICWD, 1989) was used for the field identification of wetlands. A field survey of the site's vegetation, soils, and hydrology was conducted on 26-27 February and 4 March 1991. Various points, distributed along the wetland-upland boundaries and within the wetland areas, were chosen for detailed soil and vegetation

descriptions and logged (Appendix D). Additional unlogged observations were gathered as necessary to ensure adequate site coverage.

Vascular plant species were identified using nomenclature that conforms with the "National List of Scientific Plant Names" (USDA/SCS, 1982). The wetland indicator status of plants was determined using the "National List of Plant Species that Occur in Wetlands: Northeast (Region One)" (Reed, 1988).

Soil borings were taken with a 3.25-inch diameter, hand-held bucket auger. Profile descriptions were made following guidelines established in "Soil Taxonomy, Agricultural Handbook 436" (USDA/SCS, 1975) and the "Soil Survey Manual" (USDA, 1951). The samples were not assigned to series and drainage class due to the lack of a local soil survey and the extreme disturbance to the site. Much of the soils were "made land," lacking typical soil profiles and field indicators for hydric soils. Special emphasis was given to vegetation observations and wetland hydrology indicators (including surface topography, depth to soil saturation or standing water, and sedimentation).

Based on this survey methodology, wetlands were identified and the wetland/upland boundaries were marked with sequentially numbered stakes and flags. These points were subsequently located, and their positions were determined by licensed land surveyors and plotted on a survey plat (Figure 3-3).

3.1.4.2 Survey Results

Two wetlands were delineated and designated as the North Ditch and South Ditch (Figure 3-3). The North Ditch is a channelized intermittent creek delineated from a culvert discharge beneath Access Road to the western corner of the proposed fence boundary. The South Ditch is a small drainage swale that lies along an onsite gravel road and flows roughly parallel along the southern boundary of the proposed fence.

The North Ditch wetland boundary generally follows the toe of the bank of the ditch and extends slightly outward toward the landfill in three places. The northern boundary was field delineated with points designated AA-1 through AA-14, and the southern boundary with points designated AB-1 through AB-17. Outward expansions beyond the toe of the bank were delineated between points AB-5 and AB-7, AB-8 and AB-12, and AB-15 and AB-17.

Standing water was observed in most of the creek at the time of the wetland delineation. No standing water was observed from the culvert discharge to a point past AB-2, or in an area starting just beyond AB-4 to AB-5.

Plant species found in and along this wetland included: groundsel bush (<u>Baccharis</u> halmifolia, willows (<u>Salix spp.</u>), sweet gum (<u>Liquidambar styraciflua</u>), southern bayberry (<u>Myrica cerifera</u>), common reed (<u>Phragmites australis</u>), soft rush (<u>Juncus effusus</u>), bushy bluestem (<u>Andropogon glomeratus</u>), goldenrods (<u>Solidago spp.</u>), Japanese honeysuckle (<u>Lonicera japonica</u>), smartweeds (<u>Polygonum spp.</u>), grapes (<u>Vitis spp.</u>), and greenbriars (<u>Smilax spp.</u>).

The South Ditch wetland boundary is best described as a small drainage swale that lies between the proposed southern fence boundary and an onsite gravel road. The northern boundary was field delineated with points designated BA-1 through BA-16, and the southern boundary with points designated BB-1 through BB-18. This wetland begins as a ponded area in the western portion and narrows into a ditched area along the road to the east. The South Ditch collects and holds surface runoff from the surrounding areas; standing water was observed in many portions. However, rainfall occurred the weekend prior to South Ditch wetland delineation.

Plant species found in this wetland included: common reed (<u>Phragmites australis</u>), groundsel bush (<u>Baccharis halmifolia</u>), common clotbur (<u>Xanthium chinense</u>), goldenrods (<u>Solidago spp.</u>), panic grasses (<u>Panicum spp.</u>), bushy broomsedge (<u>Androgogon</u>

glomeratus), yellow fox-tail grass (Setaria glauca), and an unidentified aster (Aster spp). Identifying additional species was complicated by the early seasonal timing of the delineation.

The soils were found to be "made land" in both wetland and non-wetland areas. The soils on top of the landfill area included layers of ash, shell fragments, and natural soils of unknown origin. The soils in the North Ditch were also of indeterminant origin: they were either fill or lower horizons of original soils with the upper horizons removed.

Both direct and indirect hydrologic evidence was used to determine the presence or absences of wetland hydrology. Direct evidence included observed surface water, the presence of saturated zones close to the surface, and the determination of depth to standing water in the boreholes. Indirect evidence included surface observations indicative of ponding, flooding, or flow channels and plant morphological features indicative of prolonged soil saturation (mostly adventitious roots). Vegetative and topographical changes were used in conjunction with the hydrological indicators to make a final wetland boundary determination.

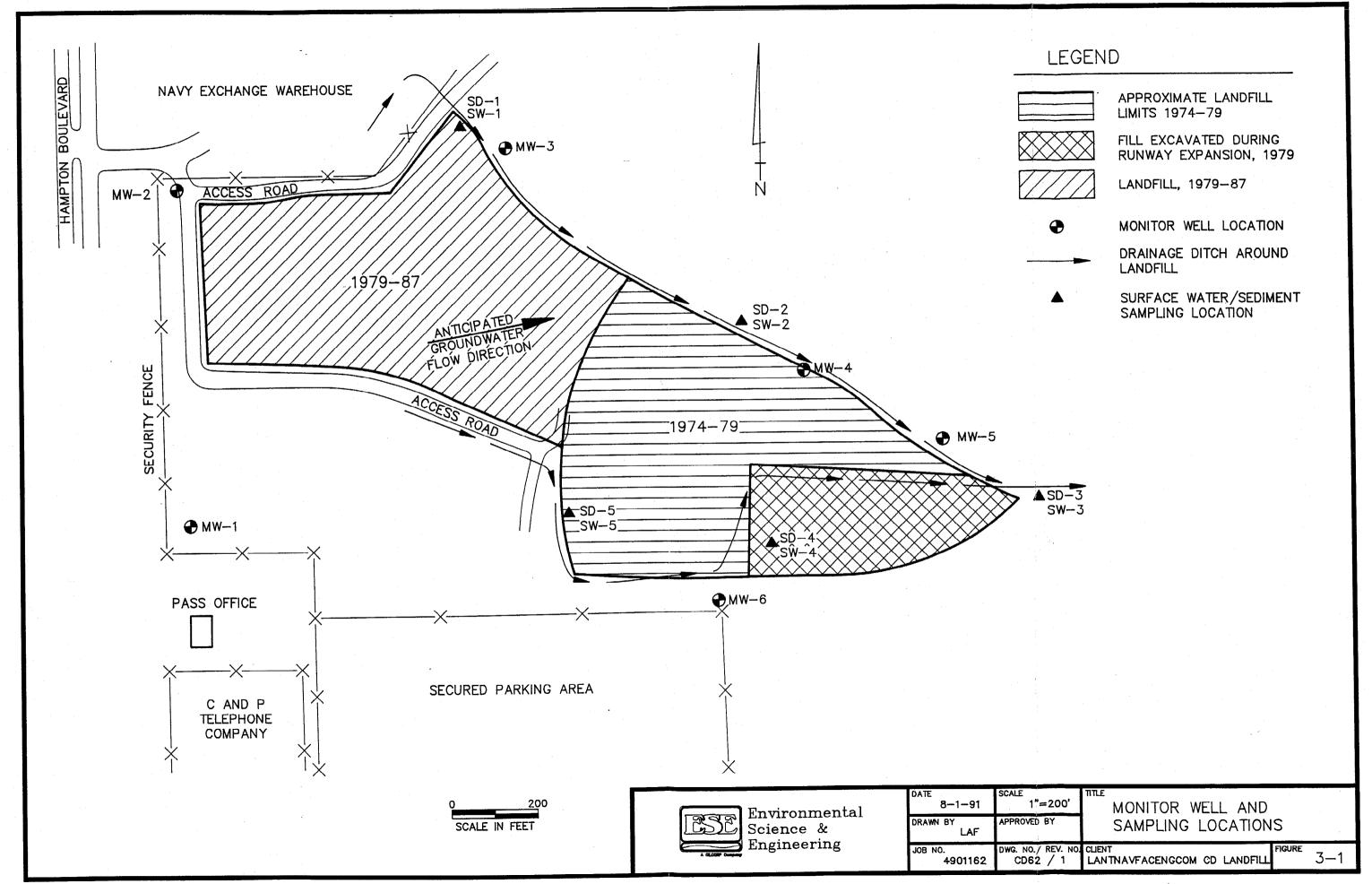
The North Ditch, an approximately 0.1-acre wetland, includes the entire creek bed and several small overflow basins. The northern boundary follows the toe of the bank, generally 4 to 5 feet high. The southern boundary also follows the toe of the bank, but includes several basins that pond when the creek floods. These small basins are generally vegetated with common reed (<u>Phragmites australis</u>) and show signs of standing water (water-stained leaves). These basins contain some of the few soils that exhibit expected characteristics (e.g., soil profile characteristics of hydric soils).

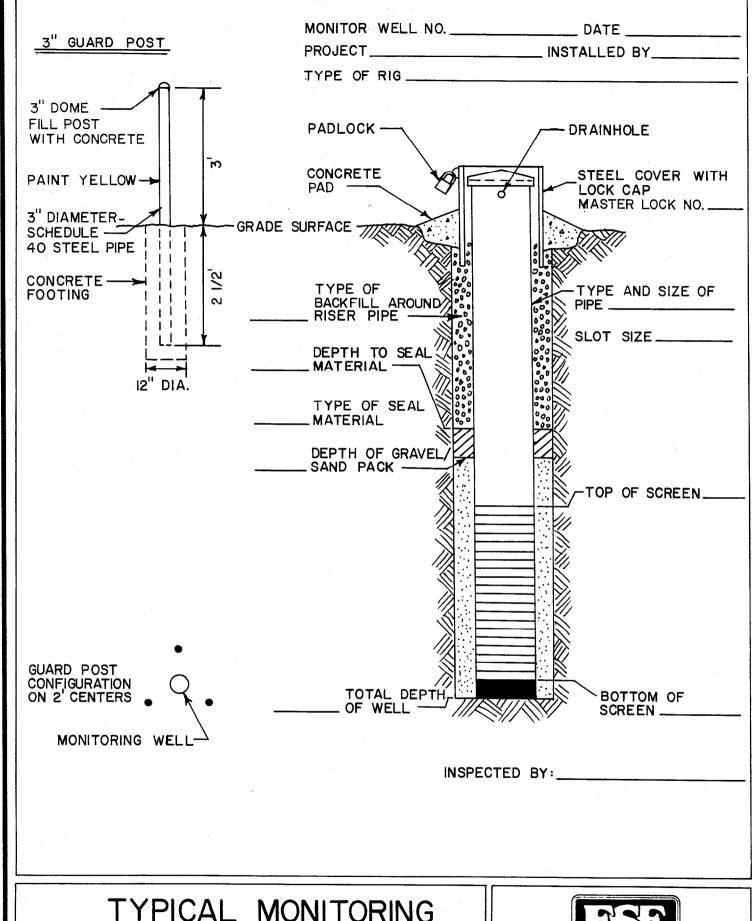
The South Ditch, an approximately 0.08-acre wetland, was more difficult to delineate. Vegetative cover, topographic contours, and evidence of ponding (including adventitious roots on some plants and the development of a mucky layer in the A horizon) were used

to delineate the southern boundary. The northern boundary was delineated primarily using the toe of the bank along the road.

Rainfall over the weekend prior to the delineation had ponded in many portions of the South Ditch. Aquatic insects were observed in some of these ponded areas, helping to reinforce the boundary delineation.

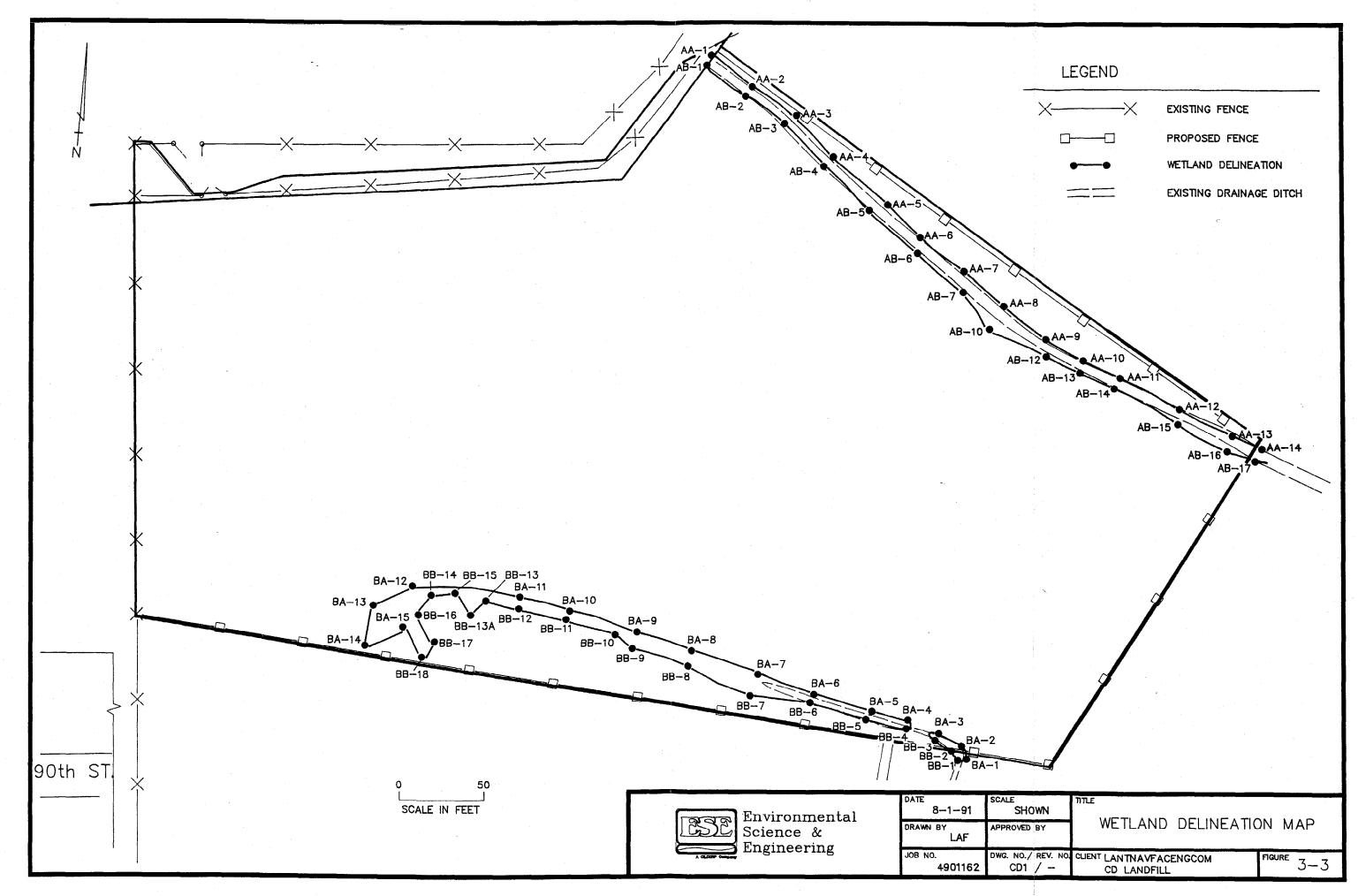
The hydrological regime driving the South Ditch wetland appears to be surficial runoff from the landfill, creating ponding on top of soils with a low permeability layer. Other smaller ponded areas were evident elsewhere on the site, but were isolated and insignificant in size.





TYPICAL MONITORING WELL CONSTRUCTION





4.0 PHYSICAL CHARACTERISTICS

The physical characterizations and observations made at the study area were performed using a variety of field and office methods. The field methods were employed to explore the site geology and hydrogeology and to record physical features. The office methods helped verify the field investigation results and determine site history, regional geology, and hydrogeology.

4.1 Surface Features

CD Landfill is on a low-lying peninsula which is part of the Atlantic Coastal Plain Physiographic Province. Site elevation ranges from msl to 15 feet above ground surface. Drainage in the area is sluggish, and most streams are tidally affected.

The present topography of the landfill is relatively flat, although it has been reworked by landfilling operations. The two landfill areas (1979-1987 and 1974-1979) were not identified: the confirmation study assumed that the landfill boundaries are separated by a series of soil mounds. The site is currently covered with scrubby underbrush and a few small deciduous trees. A drainage ditch, is assumed to form the solid waste landfill boundary, borders the north, east, and south site areas, and the intermittent surface water in it flows to the east. The ditch was moved from its natural position to its present location as a result of past landfilling operations. A Naval Air Base runway is located in the eastern portion of the fenced area, and only authorized personnel have access. The drainage ditch separates the study area and the air strip.

Construction debris was evident everywhere onsite during the field activities. In addition, a package of pesticides was located on the bank in the northern drainage ditch area. Abundant wildlife observed during all phases of the investigation is described in Section 3.1.4.

4.2 Contaminant Sources

CD Landfill received a series of inert and solid wastes starting in 1974, including construction debris, sandblasting grit, spent rice hulls, and ash. An estimated 1500 cubic yards of sandblasting grit was deposited in the landfill from 1974 to 1981. In 1981, the grit was tested according to EPA's Extraction Procedure Toxicity (EP TOX) test, which simulated the leaching environment that potentially occurs at a landfill. The final results of this test classified the grit as hazardous.

Approximately 90 tons of spent rice hulls were deposited directly on the surface of the landfill until 1983. The rice hulls, used for blasting cadmium plate parts, were tested using the same procedures as sandblasting grit and classified as hazardous waste.

A third potential source of contamination is the estimated 8,500 tons of ash deposited in the landfill from 1974 to 1979. The EP TOX test was performed, and the cadmium concentrations were less than EP TOX limits. However, the same material was tested several years later and found to exceed EP TOX limits for cadmium and lead.

A final source of contamination is the construction debris deposited in the landfill from 1974 until closure in 1987. An undetermined volume of various types of construction waste, including asbestos, was deposited during the 13 years of operation. No other potential contaminants sources have been investigated or recorded to date.

4.3 Geology

4.3.1 Regional Geology

The CD Landfill is located in the outer Atlantic Coastal Plain Physiographic Province, characterized by low elevations and relief, sloping gently eastward. Several thousand feet of unconsolidated sediments are found in the Tidewater area. The six geologic units located in this area are: Patuxent Formation, "Transitional beds," Mataponi Formation,

Calvert Formation, Yorktown Formation, and the Columbia Group (Siudyla, et al., 1981). Figure 4-1 briefly describes the stratigraphic and hydrogeologic units.

The uppermost geologic unit and youngest formation is the Columbia Group; its average thickness ranges from 20 to 50 feet. The beds are characterized by light-colored clay, sand, and silt. Monitor wells installed at the CD Landfill confirmed the sand depth to an average of 23 feet and dark clays from 23 to 25 feet below surface.

The Yorktown Formation underlies the Columbia Group and is Miocene in age. The unit is characterized by coarse sand, gravel beds, and abundant thick shell beds. The formation ranges in thickness from 300 to 400 feet. ESE did not encounter this formation during the field investigation.

The Calvert Formation is Miocene in age and underlies the Yorktown Formation with an average thickness of 200 feet. It is characterized by fine-grained, light-colored sands, dark blue to black sandy clays and diatomaceous earth beds (Wentworth, 1930).

The Mattaponi Formation consists of glauconitic sand, glauconitic clay, and shells; its estimated thickness is 65 feet (Wentworth, 1930). This upper Cretaceous formation overlies the Patuxent Formation and Transitional Beds.

The "Transitional beds" and the Patuxent Formation are Cretaceous in age and are the oldest unconsolidated units found in the Tidewater area. Both units are characterized by interbedded gravels, sand, silt, and clay; it is difficult to distinguish the two.

4.3.2 Site-Specific Geology

During the site investigation, ESE was able to confirm (by soil sampling) that the site is immediately underlain by yellow-brown sands with varying amounts of silt and clay

(SM-SC). A moderate to dark clay strata was encountered in MW-1, MW-2, MW-5, and MW-6 at an average depth of 21.2 feet beneath the ground surface. The clay strata was not penetrated, to prevent possible contamination of a lower aquifer. MW-4 through MW-6 have a lean to fat clay (CL-CH) stratum at various depths (to 11.0 feet). This material was classified in the field as disturbed soil placed as fill material.

The subsurface soil profile resembles that of the Columbia Formation. Soil borings were not extended below 25 feet, so comparison with the Yorktown Formation could not be made for this study. The soil descriptions for each location are presented in Appendix B.

4.4 Hydrogeology/Hydrology

Water resources at CD Landfill and the surrounding area consist of two major sources: groundwater and surface water.

4.4.1 Groundwater Occurrence

Groundwater supplies at CD Landfill consist of the water stored in the pore spaces of the underlying sediments. Regionally, two aquifers are thought to be present in the area, corresponding to the uppermost Columbia Group and the underlying Yorktown Formation, separated by a clay aquitard. The monitor wells installed at the site did not penetrate far enough to encounter the Yorktown Formation or the clay aquitard, although both have been confirmed at other locations at the base. The Yorktown aquifer produces water of sufficient quality for potable use.

The upper Columbia aquifer is an unconfined water table aquifer. Thickness has not been determined at the CD Landfill, but it is at least 25 feet thick as observed in the monitor wells installed at the site. The groundwater in the water table aquifer is not of sufficient quality to be used as a potable source; VDOH has restrictions on the use of water table aquifers as potable water sources. However, the water can be used for irrigation, industrial, etc.

Groundwater in the study area is sustained by precipitation that infiltrates the land surface. Average annual rainfall in Norfolk is 44 inches; total recharge is influenced by runoff and evapotranspiration at the CD Landfill. Runoff is not likely to result in much loss because the site is unpaved and well vegetated. Evapotranspiration probably has a more significant impact on recharge due to the dense vegetation. The annual recharge to the water table aquifer is not known, but is estimated to be between 15 and 20 inches.

Groundwater discharge from the water table aquifer is not fully understood, but is likely into Willoughby Bay to the northeast, the direction of flow.

4.4.2 Groundwater Movement

Regional (across the base) steady-state groundwater flow directions have not been fully evaluated. The flow pattern is likely to be complex: it is influenced by one or more of the tidal water bodies surrounding the base, as well as man-made drainage ways across the base and surrounding areas.

Onsite flow was determined from the liquid level data (Appendix E) collected from the monitor wells installed at the site during the field investigation. The water table across the site ranges from 4 to 7 feet above msl. The gradient and flow direction are generally to the east and northeast (Figures 4-2 and 4-3).

Horizontal gradients across the site in the water table aquifer were calculated by dividing the hydrostatic head difference between two points along a flow line (perpendicular to a contour line) by the horizontal distance between those two points. Measurements from two monitor wells located along a flow line provide the best data for calculating the gradients. Because the monitor well placement does not always allow this, measurements were taken from the groundwater contour maps. These measurements were used to calculate the following mean values for horizontal gradients across the site: 11 March 1991 at 0.0052 ft/ft, and 12 June 1991 at 0.0035 ft/ft. The difference in gradients and

hydraulic head distributions between the two events is likely due to seasonal fluctuations. Vertical gradient and in-situ aquifer conductivity tests (slug tests) were not within the project scope.

4.4.3 Surface Water

Surface water at the site is confined to the two ditches that merge at the southeastern site corner. The first ditch runs southeast from the access road to the north of the site (near MW-3), past MW-4 and MW-5. The second ditch runs west to east from the center of the fenced portion of the site, past MW-6, until its confluence with the first ditch. The confluence was the collection point for sediment sample SD-3 and surface water sample SW-3.

Water elevation measurements in the ditches were taken by the survey party the day after monitor well elevation data was obtained. Elevations are shown on the ground-water contour map for 11 March 1991 (Figure 4-2).

The data indicate that following precipitation events, the ditches recharge the ground-water across the majority of the site, except for the far eastern portion between surface water and sample locations SW-2 and SW-3. Here, surface water elevations are lower than groundwater elevations observed in the nearest wells (MW-4 and MW-5), suggesting that the groundwater discharges into the ditches, maintaining the that water flows in them. It appears that fluctuations in the groundwater table will greatly influence the amount of water in the ditches: the higher the groundwater table, the further to the west (in the ditches) that water will be found. Precipitation events will cause runoff and create flow in the ditches (recharging the groundwater by infiltration) until static conditions are again reached.

VIRGINIA

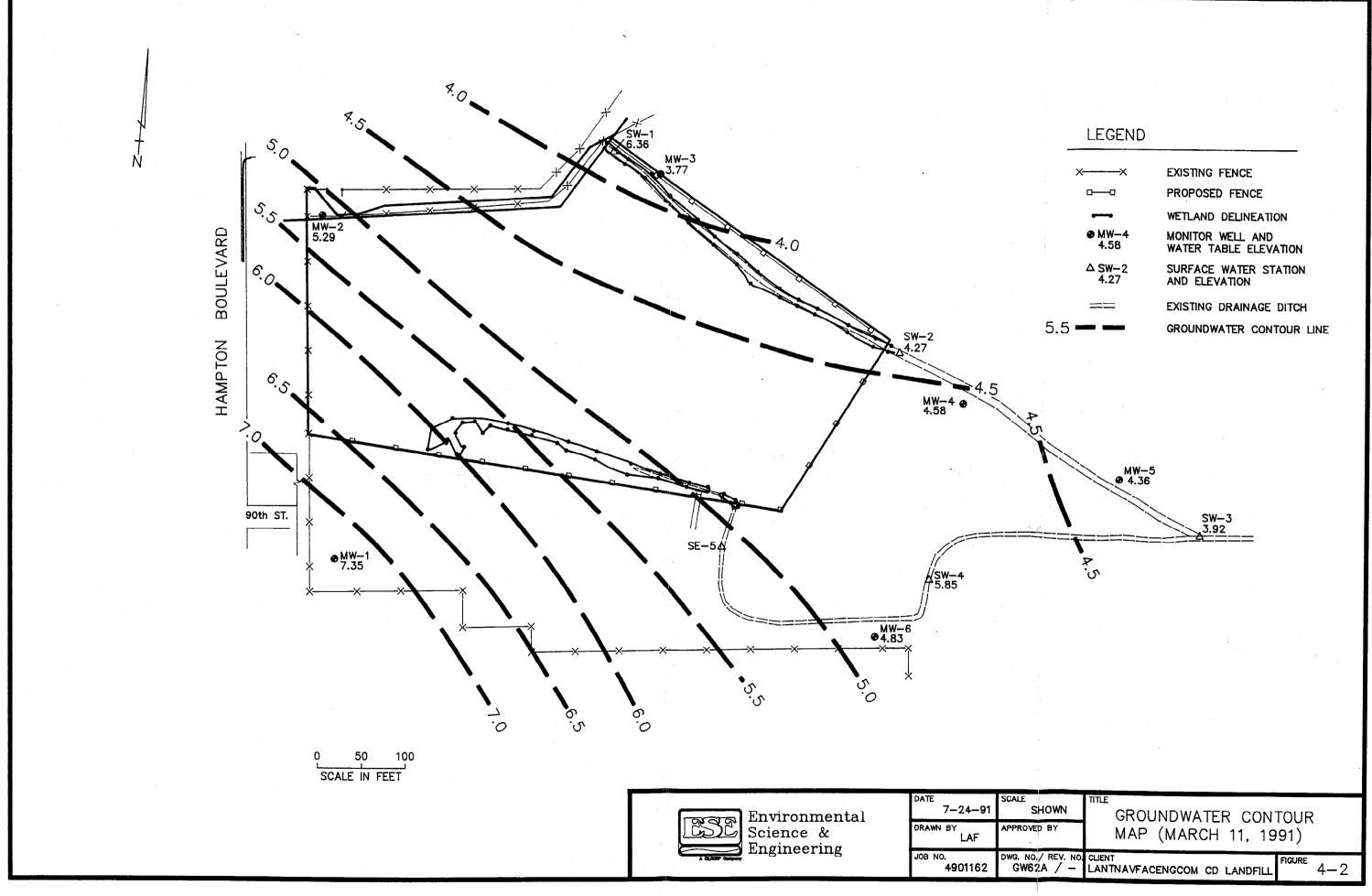
SYSTEM	SERIES	STI	RATIGRAPHIC UNITS	HYDROGEOLOGIC UNITS	DESCRIPTION OF HYDROGEOLOGIC UNITS			
QUATERNARY	RECENT PLEISTOCENE	RECENT COLUMBIA GROUP		RECENT WATER TABLE COLUMBIA GROUP QUATERNARY AQUIFER		OR QUATERNARY	Unconsolidated sand, silt and some gravel. Sand units yield quantities adequate for domestic and small industrial demands, used extensively for lawn watering. Unconfined aquifer.	
TERTIARY	UPPER	ESAPEAKE GROUP	YORKTOWN	YORKTOWN AQUIFER	Sand and shell beds main water— bearing units. Adequate for moderate public and industrial supplies. Artesian			
	MIOCENE BLODIM	CHE	CALVERT	CONFINING UNITS	Silt and clay predominant, minor sand lenses.			
٠.	I.N.E.	NANJENDY		NOT FOUND IN STUDY AREA				
	EOCENE	N	IATTAPONI	EOCENE-UPPER CRETACEOUS AQUIFER	Glauconitic sand and interbedded clay and silt. Infrequently used as a water supply. Yields adequate			
· ·	UPPER				for moderate supplies. Brackish in most of area. Artesian			
CRETACEOUS	LOWER	CRETACEOUS BEDS PATUXENT PATUXENT		LOWER CRETACEOUS	Interbedded gravel, sand, silt, and clay. Yields are adequate for large industrial use. Brackish in most of area. Artesian			

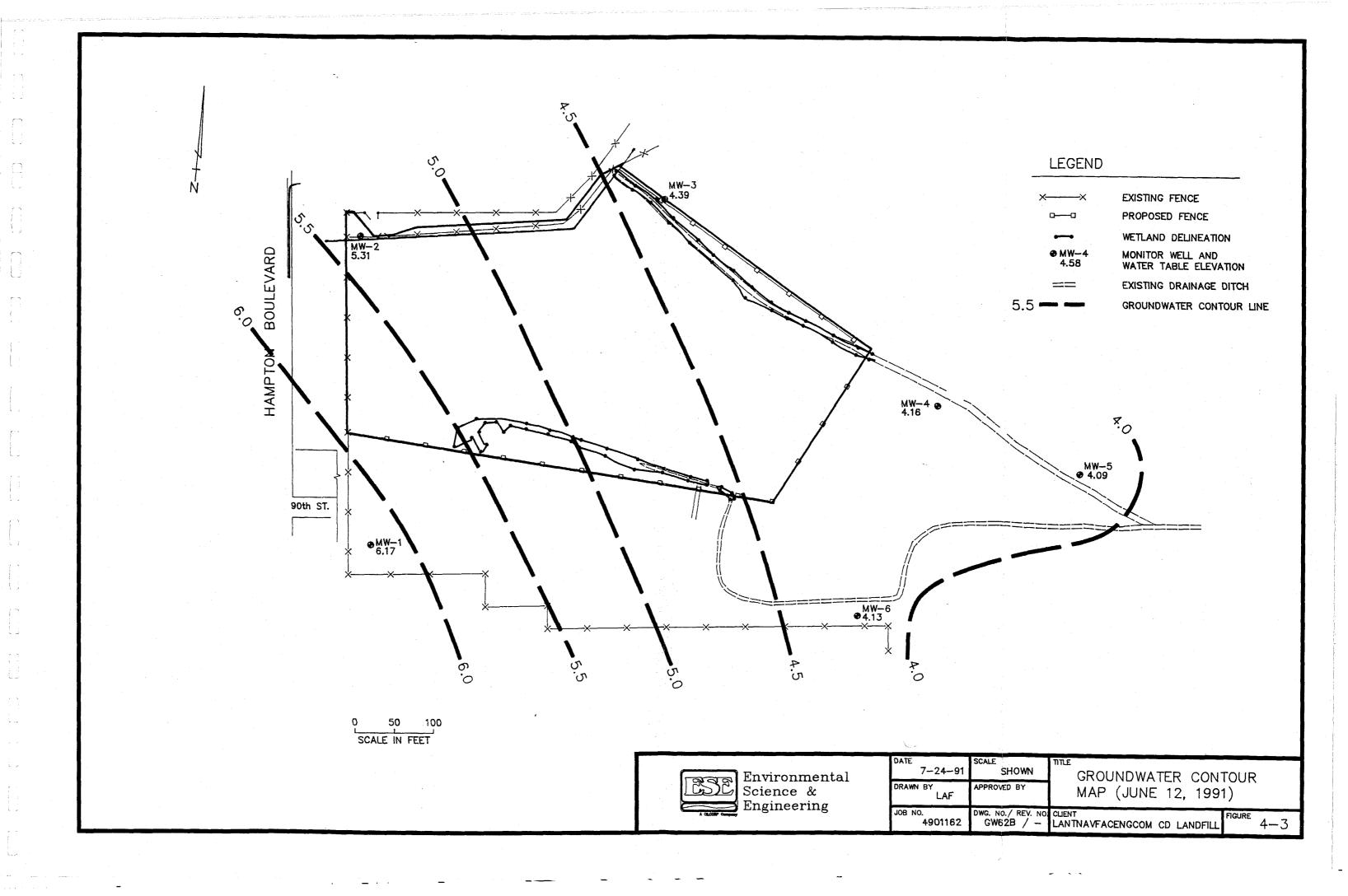
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UNITS — SOUTHEASTERN VIRGINIA (FROM SIUDYLA, ET AL., 1981)

LANTNAVFACENGCOM CD LANDFILL FIGURE 4-1





5.0 DEGREE OF CONTAMINATION

This section discusses the sampling and analytical results for each of the media sampled during the expanded SI. The analytical results for each media are compared with the data from background samples to accurately depict fluctuations in contaminant levels in those media under scrutiny. Two sampling events were performed to help characterize the contaminants at the site: Round 1 began on 20 February 1991 with surface water, groundwater, soil, and sediment sampling; and Round 2 was initiated on 10 June 1991 with surface water and groundwater sampling only.

Laboratory data validation and Quality Assurance/Quality Control (QA/QC) were performed by ESE's laboratory in Gainesville, Florida and reviewed by ESE's project team in Herndon, Virginia. Laboratory QA/QC data and full analytical data are presented in Appendix F.

5.1 Subsurface Soils

Round 1 sampling included collecting subsurface soil at two intervals from each monitor well location. The sample intervals were 0-2 feet (upper sample) and the last 2 feet of the vadose zone above the potentiometric water surface (lower sample). Subsurface soil samples were not collected during Round 2.

Individual samples are referred to by a four-digit code. The first two digits (e.g., S0) indicate that the sample came from one of the six soil borings; the third digit (e.g., 1) reflects the boring number; and the fourth digit (U or L) represents the sample collection depth. The "U" represents the upper sample depth, and "L" represents the lower sample depth. The soil sample locations are shown in Figure 3-1, and the soil analytical results are summarized in Table 5-1.

5.1.1 Selected Metals

Among the potential contaminants deposited in the landfill, cadmium, lead, and iron were selected for analysis. Cadmium was detected in 50 percent of the upper soil samples (S01U through S06U) collected during Round 1. The concentrations ranged from 0.4 milligrams/kilogram (mg/kg) in S02U to 28.4 mg/kg in S04U. Thirty-three percent of the samples collected in the lower interval had concentrations of cadmium, from 0.6 mg/kg in S04L to 0.7 mg/kg in S06L.

Lead was detected in all of the upper samples (S01U through S06U). Concentrations ranged from 10.7 mg/kg in S05U to 4140 mg/kg in S04U. However, only two samples in the lower interval detected lead: S06L with 43.3 mg/kg and S04L with 48.4 mg/kg.

Construction landfills are excellent sources of high concentration precipitated iron leachate in soils and groundwater. Iron concentrations detected in both sampling intervals in the six soil borings were well above the VWCB standard of 3 milligrams/kilogram (mg/kg); water from the majority of the water table aquifer exceeds the standard (Siudyla et al., 1981). The minimum and maximum concentrations detected were in S05L with 1,934 mg/kg and S04U with 142,293 mg/kg.

5.1.2 Total Organic Halogens (TOX)

TOX was analyzed at CD Landfill to indicate the presence of halogenic compounds detected in the soils. In the 12 soil samples collected during Round 1, TOX was detected at each interval; concentrations ranged from 3 μ g/kg in S01L to 78 μ g/kg in S04U. TOX concentrations were generally higher in the upper soil samples than the lower samples.

5.2 Sediment

During Round 1, five samples were collected in the drainage ditch that borders the site. The sampling locations found in Figure 3-1 are identified as SE-1 through SE-5. Samples were collected in the top 3 inches of the soft sediment in each location shown in

Figure 3-1. Sediment was not collected during Round 2; analytical results are included in Table 5-2.

5.2.1 Selected Metals

Each of the five samples have cadmium concentrations ranging from 0.5 mg/kg in SE-4 to 4.9 mg/kg in SE-5. Lead was also detected in each sample from 18.7 mg/kg in SE-4 to 145 mg/kg in SE-5. Similar to the soil samples, the iron content was fairly high due to iron leachate from the landfill. Concentrations range from 4860 mg/kg in SE-4 to 93,700 mg/kg in SE-3.

5.2.2 Total Organic Halogens (TOX)

TOX was detected in all the sediment samples ranging from 2 μ g/kg in SE-1 to 1400 μ g/kg in SE-3. SE-3 was collected at the confluence of the two drainage ditches, which may explain the significantly higher concentration.

5.2.3 Cadmium

Cadmium is a potential landfill contaminant that may have migrated offsite by erosional effects (e.g., air, runoff) or surface water transport. Cadmium detected in the five sediment samples ranged from 0.5 mg/kg in SE-4 to 4.9 mg/kg in SE-5. Cadmium was not detected above the instrument detection limit in any of the groundwater/surface water samples for both rounds.

5.3 Groundwater

Groundwater provides a means for contaminant transport and redistribution away from a contaminated source area, thus increasing the size of a contaminant plume. To determine the extent of contamination, two rounds of groundwater samples were collected: Round 1 on 20 February 1991, followed by Round 2 on 10 June 1991. Laboratory analyses were performed on both rounds for cadmium, groundwater quality,

and indicator parameters. The groundwater quality and indicator parameters were analyzed according to Phase I of the VDWM landfill closure requirements. Groundwater analytical results are summarized in Tables 5-3 and 5-5.

5.3.1 Groundwater Indicator Parameters

The following parameters were analyzed to indicate if groundwater is contaminated with pollutants leaching from the landfill: TOX, TOC, pH, and specific conductivity. Round 1 results for TOX ranged from below detection limits (BDL) in MW-3 to 4100 μ g/l in MW-5, with the an average 879 mg/l. TOC ranged from 1.8 mg/l in MW-3 to 6.3 mg/l in MW-2, with an average 4.4 mg/l. The average laboratory pH for the first round of sampling was slightly acidic: 5.65. The specific conductivity ranged from 231 micromhos/centimeter (μ mhos/cm) in MW-3 to 1300 μ mhos/cm in MW-4.

Round 2 results for TOX ranged from BDL in MW-6 to 97 μ g/l in MW-1, with an average 55.8 μ g/l. TOC ranged from 4.1 mg/l in MW-3 to 15.7 mg/l in MW-2, with an average 9.7 mg/l. The average laboratory pH during this round was 5.7, and specific conductivity ranged from 322 μ mhos/cm in MW-3 to 1410 μ mhos/cm in MW-4.

5.3.2 Groundwater Quality Parameters

To determine if CD Landfill has contaminated groundwater beyond the solid waste boundary, the following quality parameters were analyzed: iron, lead, sodium, and hardness. To compare the total concentrations and dissolved concentrations of metals in the groundwater, filtered and unfiltered samples were collected during Round 1 only.

Round 1 analytical results for the filtered and unfiltered lead samples were both below the detection limit of 47 μ g/l in the six wells. Iron concentrations were significantly higher in the unfiltered samples, with ranges of 1458 μ g/l in MW-3 to 38,129 μ g/l in MW-5. In comparison, the filtered samples ranged from 12 μ g/l in MW-3 to 31,651 μ g/l

in MW-5. The two parameters not filtered during this round were hardness and sodium. The average groundwater hardness across the site was 280 mg/l. Sodium concentrations ranged from 9.9 mg/l in MW-3 to 130 mg/l in MW-4, with an average 42 mg/l.

Groundwater samples during Round 2 of the sanitary program were not filtered. In comparison to the total lead and iron concentrations of Round 1, Round 2 concentrations increased approximately 2.5 times. Lead concentrations ranged from BDL in MW-3 to $128 \mu g/l$ in MW-6. Iron was detected from $4070 \mu g/l$ in MW-3 to $139,000 \mu g/l$ in MW-4. Very little difference existed in sodium and hardness from Round 1 to Round 2. The average concentrations of Round 2 for hardness were 295 mg/l and 42.55 mg/l for sodium.

5.3.3 Cadmium

Cadmium was not detected in the groundwater samples collected in Round 1 or Round 2. The instrument detection limit for both rounds was 3 μ g/l.

5.4 Surface Water

Surface water samples collected in Round 1 and Round 2 were identified as SW-1 through SW-5 and analyzed for cadmium, and water quality and indicator parameters. The drainage ditch sampling locations are shown on Figure 3-1. The sample locations were selected because the drainage ditch was determined to be a contaminant migration pathway during the IAS. Analytical results are found in Tables 5-4 and 5-6.

Water samples were not filtered prior to collection. Round 1 samples were collected in three of the five locations recommended. Samples SW-1 and SW-5 were not collected because the locations were dry; a second attempt to collect these samples also failed. However, additional samples were collected during the second attempt from SW-2, SW-3, and SW-4 for analysis of pH, specific conductivity, TOX, hardness, and TOC.

Only two of the five samples were collected during Round 2. Sample locations SW-1, SW-4, and SW-5 were dry. No second attempt was made to collect these samples.

5.4.1 Water Quality Parameters

Lead was the only analyte not detected in both sampling rounds. The detection limit for lead in the first round was 47 μ g/l; the second round was 34.5 μ g/l. The difference in the instrument detection limit is based on the amount of particulates in the sample: the more particulates, the higher the detection limit. In Round 1, a moderate to high iron concentration was detected in samples SW-2, SW-3, and SW-5, ranging from 250 μ g/l in SW-2 to 4330 μ g/l in SW-3. Round 2 iron concentrations ranged from 2650 μ g/l in SW-2 to 38,100 μ g/l in SW-3. The water hardness between the two rounds was comparatively the same: Round 1 ranged from 158 mg/l in SW-3 to 246 mg/l in SW-4, and Round 2 concentrations were 172 mg/l in SW-2 and 180 mg/l in SW-3.

5.4.2 Indicator Parameters

The surface water obtained at the site during both rounds of sampling were collected downgradient of the landfill. The water table aquifer in the Norfolk area is typically acidic (average 6.5-9). However, the surface water east of the landfill is basic with an average pH of 7.2 in Round 1 and a average pH of 7.5 in Round 2. Construction rubble (i.e., concrete) is believed to decrease water acidity.

The specific conductivity during both sampling rounds ranged from 327 μ mhos/cm in SW-4 to 905 μ mhos/cm in SW-2; Round 2 results were 320 μ mhos/cm in SW-2 and 409 μ mhos/cm in SW-2.

TOX during Round 1 was consistently higher than Round 2. Round 1 ranged from 340 μ g/l in SW-2 to 420 μ g/l in SW-4. In comparison, Round 2 results were 13 μ g/l in SW-2 and 84 μ g/l in SW-3. Round 1 TOC ranged from 5.6 mg/l in SW-3 to 7.9 mg/l in SW-4. Round 2 concentrations were 5.2 mg/l in SW-2 and 170 mg/l in SW-3.

5.4.3 Cadmium

Cadmium was not detected in the surface water samples in either sampling round. The instrument detection limit for both rounds was 3 μ g/l.

5.5 Summaries of Media Contamination

5.5.1 Subsurface Soil

Moderate to high cadmium and lead concentrations were detected in the upper 2 feet at each sample location. The highest concentrations occurred in SO-4, located within the landfill inner boundaries. High lead levels were also detected in the lower sample intervals. Lower cadmium levels were detected in the lower level than in the upper 2 feet. Locations SO-4 and SO-6 were the only locations where cadmium and lead were detected at both intervals. These two areas may be considered point sources for offsite migratory contamination. The levels detected in the remaining upper samples may have been the result of offsite migration by groundwater transport or surface and wind erosion during landfill operations from 1974 to 1987.

Very weak relationships exist among the other contaminants analyzed in the subsoils at CD Landfill. The levels are extremely variable, and it is difficult to relate this data to determine point source soil contamination and make any corrections. There are no local, state, or Federal guidelines or standards to establish remedial recommendations for soils for the analyzed parameters.

5.5.2 Sediment

Sediment samples were collected only during the first round of sampling. Other than SE-5, cadmium and lead concentrations were minimal. The high concentrations at SE-5 are assumed to be due to the drainage ditch and sampling location within the landfill boundaries; this may be a result of wastes disposed of directly on the sampling location when the landfill was open. Contaminant transport downstream in the sediment is also confirmed by increasing concentrations of TOX, cadmium, iron, and lead in SE-1 than in SE-2, SE-3, or SE-5. Contaminant concentrations in SE-4 appear to be an anomaly,

being unexpectedly lower than SE-5. Sample SE-3 is somewhat elevated, presumably due to contaminants transported by the drainage ditches that converge at the sampling location. TOX data also confirms offsite contaminant transport because contaminants levels increase to the east, in the direction of surface water flow.

5.5.3 Groundwater

Analytical data indicate that cadmium was not detected in the monitor wells that encompass the site. Five of the six wells in Round 1 and four wells in Round 2 exceeded at least four VWCB groundwater quality and indicator parameter standards. All six wells exceeded at least three VWCB standards during both sampling rounds.

Lead was not detected in Round 1; however, four of the six samples (MW-2, MW-4, MW-5, and MW-6) collected during Round 2 exceeded the VWCB lead standard of 50 μ g/l. A close relationship exists between the high soil contaminant levels in SO-4 and SO-6 and the high concentrations of lead in MW-4 and MW-6. It appears that the southeast portion of the site is leaching lead into the groundwater beyond the solid waste boundary.

Iron concentrations exceeded the VWCB guideline of $0.3 \mu g/l$ in all sampling locations during both sampling rounds, except sample MW-3 for dissolved (filtered) solids. The high iron content can be correlated to the high iron content in the subsoils, thus precipitating iron into the groundwater. A weak relationship exists between the high iron levels in the water and the high iron levels in the soil, although both media are very high. The analytical data indicate that some wells with higher iron concentrations are associated with lower soil concentrations; the opposite also occurs. This phenomena may be indicative of greater iron leaching from the soil into groundwater in those wells with higher iron concentrations. An iron point source(s) is difficult to determine.

The acidic water that enters from the west becomes basic as it progresses through the landfill. Construction debris in landfills contains concrete, and the lime in the concrete breaks down and dissolves into the water, thus reducing acidity.

TOC in MW-2 and MW-4 exceeded the VWCB guideline of 10 mg/l in Round 2, although first round samples were below the guideline. Additional TOC monitoring is required to evaluate the full impact on groundwater.

Water hardness exceeded the VWCB guideline of 120 mg/l in all samples for both sampling rounds. The VWCB guideline of 100 mg/l for sodium was exceeded in MW-4 during both sampling rounds.

TOX was detected in both sampling rounds without any general migration trend or contaminant point source. There are no local, state, or Federal guidelines/standards for TOX. This parameter indicates that the groundwater quality is impacted by some type of organic halogen (e.g., volatiles, semivolatiles, pesticides).

5.5.4 Surface Water

VWCB proposed surface water standard amendments were exceeded for iron in both sampling rounds; cadmium and lead were not detected in the surface water in either sampling round. A comparison to sediment concentrations indicates that pollutants are migrating offsite through this media. Elevated concentrations of TOX, TOC, and iron increase eastward (downstream), and lead and cadmium concentrations in sediments also increase in this direction. However, no background samples were collected for comparison due to the lack of water at the time of sampling.

TABLE 5-1
Summary of Analytical Data for Soils (mg/kg)

CD-LANDFILL SITE INVESTI

Round 1, February 1991

		SO1U		S	601L		so2U		02L	S	:03U	. S	03L	
=======	DETEC	I ON		DETECT	ION	DETECT	ION	DETECT	ION	DETECT	ION	DETECT	ION	DETEC
	LIMIT				CONC.						CONC.		CONC.	LIMIT
MOISTURE		11.5			12.4		11.8						16.7	
TOX		19	•		3		21		44		23		10	
рH		6.7			6.8		6.4		6.6		6.9		5.0	
CADMIUM	0.3			0.3		0.3		0.3		0.3		0.3		0.3
IRON		8062			4304		6592		2749		4155		4805	
LEAD	5.19	15.5		5.19	BDL U	5.22	11.8	5.22	BDL U	5.18	15.6	5.18	BDL U	5.19
		604U		S	04L				605L				06U	
	DETECT	ION		DETECT	ION				ION		:======== :10N		ION	
COMPOUND	LIMIT				CONC.						CONC.			
MOISTURE		24.2			25.2		7.7		14.4		17.1		15.1	
TOX		78			64		40		35		9		62	
рН		6.6			6.7		6.6		6.8		6.8		6.6	
CADMIUM	0.3	28.4		0.3	0.6	0.3	BDL U	0.3	BDL U	0.3	0.7	0.3	0.6	
IRON		142293			12202		2879		1934		10636		8907	
LEAD	5.2	4140		5.2	48.4	5.2	10.7	5.3	BDL U	5.3	43.3	5.3	56	

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U - Analyte analyzed for but not detected

B - Detected above instrument detection limit but below required detection limit

BDL - Below Detection Limit

TABLE 5-2

Summary of Analytical Data for Sediments (mg/kg)

CD-LANDFILL SITE INVESTIGATION

and and and and and and and and and and

Round 1, March 1991

SAMPLE NO. SE1		SE2	SE3	SE4	SED
DETECT	ION	DETECTION	DETECTION	DETECTION	DETECTION
COMPOUND LIMIT	CONC.	LIMIT CONC.	LIMIT CONC.	LIMIT CONC.	LIMIT CONC.
MOISTURE	16.1	67.5	76.5	23.8	16.7
TOX (ug/kg)	- 2	440	1400	10	40
рН	7.5	6.8	6.5	6.9	6.8
CADMIUM	0.6	1.4	3.0	0.5	4.9
IRON	6930	56900	93700	4860	15600
LEAD	19.7	21.2	26.7	18.7	145

TABLE 5-3

Summary of Analytical Data for Groundwater (ug/l)

Federal

VWCB

Round 1, March 1991

STANDARDS STANDARDS MW-5 MW-6 MW-1 MW-1FD MW-2 MW-3 MW-4 SAMPLE NO. **VWCB** DETECTION DETECTION **FEDERAL** DETECTION DETECTION DETECTION DETECTION DETECTION CONC. STANDARDS STANDARDS CONC. LIMIT LIMIT CONC. LIMIT LIMIT CONC. LIMIT CONC. COMPOUND LIMIT CONC. LIMIT CONC. 4100 10 150 42 10 65 60 10 41 10 U 10 TOX 10 10 291 120 192 144 532 204 318 314 HARDNESS (mg/l) 10 4.6 1 4.3 1 4.9 2.2 1 6.3 1 1.8 1 2.2 TOC (mg/l) FILTERED (DISSOLVED) 300 300 b 12 12316 585 12 31651 12 22606 12 2286 12 12 B 12 IRON 12 23978 47 BDL U 50 c 50 47 47 BDL U BDL U LEAD UNFILTERED (TOTAL) 0.4 3 BDL U 5 a 3 3 BDL U 3 BDL U 3 BDL U CADMIUM 3 BDL U 3 BDŁ U BDL U 300 b 300 12 17470 38129 12 12 23660 12 1458 12 6011 12 IRON 28804 12 27363 50 50 c 47 47 BDL U BDL U LEAD 47 BDL U 28.4 20.5 100 9.9 130 41.7 SODIUM (mg/l) 22.7 22 6.11 6.5/8.5 b 6.5/9 6.13 6.10 6.32 5.05 4.18 4.19 рΗ 504 542 231 1300 789 740 552 SPEC. COND. (umhos/cm)

U - Analyte analyzed for but not detected

B - Detected above instrument detection limit but below required detection limit

BDL - Below Detection Limits

a - Maximum Contaminant Level (MCL)

b - Secondary Maximum Contaminant Level (SMCL)

c - Maximum Contaminant Limit Goal (MCLG)

TABLE 5-4
Summary of Analytical Data for Surface Water (ug/l)

Round 1, March 1991

SAMPLE NO.	s	W-1	s	W-2	S	w-3		SW-4		SW-5	FD			
	DETECTI	====== On	DETECTI	======== ON	DETECTI	ON	DETECTION	========= {	DETE	ETION	DETECTIO	======== N	FEDERAL	VWCB
COMPOUND	LIMIT	CONC.	LIMIT	CONC.	LIMIT	CONC.	LIMIT	CONC.	LIM	CONC.	LIMIT	CONC.	STANDARDS	STANDARDS
TOX	10	NA NA	10	340	10	360	10	420	10	NA	10	390		
HARDNESS (mg/l)		NA		221		158		246		NA		178		
TOC (mg/l)	1	NA	1	7.1	1	5.6	1	7.9	1	NA	1	BDL U		
CADMIUM	3	NA:	3	BDL U	3	BDL U	3	BDL U	3	NA			5 a	10 d
IRON	12	NA	12	250	12	4330	12	2878	12	NA			300 b	1 e
LEAD	47	NA	47	BDL U	47	BDL U	47	BDL U	47	NA			50 c	50 d
SODIUM (mg/l)		NA		27.2		54.3		41.9		NA				
nu (IAD)		NA		7.3		7.2		7.2		NA ·		7.15		
pH (LAB) SPEC. COND. (umh	os/cm)	NA NA		905		494		327		NA		2.64		

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U - Analyte analyzed for but not detected

BDL - Below Detection Limits

NA - Not Analyzed; no surface water present

a - Maximum Contaminant Level (MCL)

b - Secondary Maximum Contaminant Level (SMCL)

c - Maximum Contaminant Limit Goal (MCLG)

d - VWCB proposed amendments to surface water standards for protection of human health (public water supplies)

e - VWCB existing surface water standards for protection of aquatic life

TABLE 5-5

Summary of Analytical Data for Groundwater (ug/l)

Round 2, June 19 SAMPLE NO.		1W - 1	M	W-1FD	M	W-2	M	w-3		1W-4	M	w-5	М	IW-6		
COMPOUND	DETECTI LIMIT	ON CONC.	DETECTI LIMIT	ON CONC.	DETECTI LIMIT	ON CONC.	DETECTI:	ON CONC.	DETECT:	CONC.	DETECTI LIMIT	ON CONC.	DETECTI LIMIT	ON CONC.	FEDERAL STANDARDS	VWCB STANDARDS
TOX	10	97	10	49	10	33	10	59	10	39	10	51	10	BDL U		•
HARDNESS (mg/l)		328		328		208		132		596		220		288		120
TOC (mg/l)	. 1	5.1	1	4.1	1	15.7	1,	4.7	. 1	14.1	1	9.7	1	9.3		10
Unfiltered (TOTAL	·)															
CADMIUM	3	BDL U	3	BDL U	3	BDL U	3	BDL U	3	BDL U	3	BDL U	3	BDL U	5 a	0.4
IRON	. 12	46200	12	57800	12	47500	12	4070	12	139000	. 12	98600	12	105000	300 b	300
LEAD	34.5	45.1	34.5	39	34.5	60.7	34.5	BDL U	34.5	113	34.5	52.8	34.5	128	50 c	50
SODIUM (mg/l)		23.7		24.6		42.3		10		128		29.1		22.2		100
рH		4.37		4.39		5.18		6.19		6.51		6.21		6.13	6.5/8.5 b	6.5/9
Spec. Cond. (umho:	s/cm)	927		918		641		322		1410		573		607		

U - Analyte analyzed for but not detected

BDL - Below Detection Limits

a - Maximum Contaminant Level (MCL)

b - Secondary Maximum Contaminant Level (SMCL)

c - Maximum Contaminant Limit Goal (MCLG)

TABLE 5-6
Summary of Analytical Data for Surface Water (ug/l)

Round	2.	June	1991

SAMPLE NO.	S	W-1	S	W-2	S	W-3	S	W-4		sw-5 	FD				===
	DETECTI		DETECTI	ON CONC.	DETECTI LIMIT	ON CONC.	DETECTION LIMIT C	ONC.	DETECTION LIMIT C	ONC.	DETECTION		FEDARAL STANDARD	VWCB STANDARD	
COMPOUND	LIMIT	CONC.	LIMIT		LIMII)	CONC.	LIMII C		LIFILI C						
TOX	10	NA	10	13	10	84	10	NA	10	NA	. 10	390			
HARDNESS (mg/l)		NA		172		180		NA		NA		178			
TOC (mg/l)	1	· NA	1	5.2	1	· · 7	1	NA	1	NA	1	,1			
CADMIUM	3	NA	3	BDL U	3	BDL U	3	NA	3	NA					
IRON	_	NA		2650		38100		NA		NA					
LEAD	34.5	NA	34.5	BDL U	34.5	BDL U	34.5	NA	34.5	NA ·			50 c	50 d	
SODIUM (mg/l)		NA		15.3		24		NA		NA					
pH (LAB)		NA		7.88		7.17		NA		NA		7.15			
Spec. Cond. (un	nhos/cm)	NA		320		409		NA		NA					

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U - Analyte analyzed for but not detected

NA- Not Applicable; no surface water present

BDL - Below Detection Limits

a - Maximum Contaminant Level (MCL)

b - Secondary Maximum Contaminant Level (SMCL)

c - Maximum Contaminant Limit Goal (MCLG)

d - VWCB proposed amendments to surface water standards for protection of human health (public water supplies)

e - VWCB existing surface water standards for protection of aquatic life

TABLE 5-7

Summary of Analytical Data for QC Samples (ug/l)

Round 1 03/12/91 03/11/91 03/12/91 02/22/91 02/22/91 WATER WATER SOIL WATER SOIL SAMPLE NO. FLD BLK EQU BLK EQU BLK FLD BLK EQU BLK DETECTION DETECTION DETECTION DETECTION DETECTION COMPOUND LIMIT CONC. LIMIT CONC. LIMIT CONC. LIMIT CONC. LIMIT CONC. TOX 10 BDL U 10 16 10 11 10 BDL U 10 BDL U 2 HARDNESS (mg/l) 4 TOC 1 1.1 1 1.3 1 BDL U CADMIUM 3 BDL U 3 BDL U 3 BDL U IRON 12 27.6 B 12 BDL U 12 18.1 B LEAD 47 BDL U 47 BDL U 47 BDL U TOTAL CADMIUM 3 BDL U 3 BDL U 3 BDL U 3 BDL U BDL U IRON 12 27.8 B 58 B 12 215 12 45 12 108 LEAD 47 BDL U 47 BDL U 47 BDL U BDL U BDL U SODIUM 0.3 B 0.2 B 0.2 B

5.83

<10

5.45

<10

5.45

<10

CD-LANDFILL SITE INVESTIGATION ...

5.39

<10

6.21

BDL - Below Detection Limit

SPEC. COND. (umhos/cm) <10

U - Analyte analyzed for but not detected

B - Detected above Instrument detection limit but below required detection limit

TABLE 5-8

Summary of Ana	lytical D	ata for QC	Samples	(ug/l)	CD-LAN	DFILL SITE	INVESTIGATION
Round 2		6/12/91	0	6/12/91	0	6/12/91	
		WATER		WATER		WATER	
SAMPLE NO.		FLD BLK		EQU BLK		EQU BLK	
		:======)N		======== ION	DETECT		
COMPOUND	LIMIT	CONC.	LIMIT	CONC.	LIMIT	CONC.	
TOX	10	BDL U	10	10	10	BDL U	
HARDNESS (mg/l)	BDL U		BDL U		BDL U	
TOC (mg/l)		BDL U	1	BDL U	1	BDL U	
LEAD	47		47	BDL U	47	BDL Ú	
Unfiltered (TO	TAL)						
CADMIUM	3.	BDL U	3	BDL U	3	BDL U	
IRON	12	13.5	6.2	BDL U	12	8.4 B	
LEAD	34.5	BDL U	34.5	BDL U	47	BDL U	
SODIUM		0.264		0.483 B		0.494 B	
pH		6.24		6.48		6.17	
Sp Cond		<10		<10		<10	

U - Analyte analyzed for but not detected

B - Detected above Instrument detection limit but below required detection limit

BDL - Below Detection Limits

6.0 SUMMARY AND CONCLUSIONS

6.1 Summary

6.1.1 Degree of Contamination

Analyses of soil (SO-4 and SO-6), groundwater (Round 2: MW-4, MW-5, and MW-6), sediment (SE-2, SE-3, and SE-5), and surface water (SW-2, SW-3, and SW-4) indicate the southeastern portion (1974-1979 operation) is impacting the four media more than the northwestern portion of the landfill (1979-1987 operation). Specifically, analysis of the subsurface soil and sediment samples suggest that cadmium and lead contamination are beyond the solid waste boundary (drainage ditch). These metals are fairly immobile in the solid form; however, lead appears to be dissolved in the groundwater in the southeast portion of the site. Once dissolved in the groundwater, mobilization increases.

6.1.1.1 Sediment

During this investigation, iron, lead, TOX, and cadmium were detected in the sediment samples. With the exception of SE-5, the greatest concentrations gradually increased to the east. The high level in SE-5 is assumed to be the result of the sample location being within the boundaries of the landfill. Although there are no standards or guidelines for TOX in sediment, low (2 parts per billion (ppb)) to high (1400 ppb) concentrations were widespread in the drainage ditch. In addition, extremely high concentrations of iron were also detected.

6.1.1.2 Subsurface Soil

High concentrations of cadmium, iron, and lead appear to be widespread across the site, and TOX was also detected at moderate concentrations. Although cadmium, iron, and lead concentrations are high in their present condition, mobility is extremely low. Guidance or requirements for remedial action for these contaminants in soils do not exist.

6.1.1.3 Groundwater

Lead concentrations in groundwater samples from MW-2, MW-4, MW-5, and MW-6 exceeded the VWCB standard (Round 2); sodium was exceeded in MW-4; TOC was exceeded in MW-2 and MW-4 (Round 2); and iron was exceeded in all samples druing both rounds. Although TOX was detected in all samples, no TOX guidelines or standards exist for groundwater.

6.1.1.4 Surface Water

Cadmium and lead were not detected in surface water; however, a comparison to sediment concentrations indicates that pollutants are migrating offsite through this media. The concentration of iron detected in the media exceed the VWCB standards. Because no background samples were collected, comparisons cannot be made regarding elevated concentrations of TOX, TOC, and iron.

The nature and extent of all detected parameters remain inconclusive. A weak correlation can be made between high soil and groundwater concentrations directly below the soil "hot spots." Additional information (soil borings, monitor wells, and geophysical surveys) will be required to fulfill the requirements for an RI/FS.

6.2 Data Limitations

The purpose of the expanded SI is to identify which landfill wastes, if any, impact sediment, surface water, soil, and groundwater. During this investigation, analyses revealed that groundwater quality in the uppermost aquifer is impacted. To fulfill an RI/FS or closure requirements, the following data limitations will need to be addressed for each of the following three categories:

- Unpermitted Landfill Closure
 - Actual boundaries of the permitted landfill are unclear, especially the boundary with the unpermitted portion.

- Contaminant sources were not identified or recorded during the life of the landfill.
- Quarterly groundwater sampling and analysis of six monitor wells has not been completed to determine the facility's full impact on groundwater quality.
- A closure plan, separate from the unpermitted landfill, has not been prepared or submitted.

· Permitted Landfill Closure

- Actual boundaries of the permitted landfill are unclear, especially the interface with the unpermitted portion.
- Contaminant sources were not identified and recorded during landfill operation.
- Groundwater monitor wells are not installed around the perimeter of the permitted landfill as described in the closure requirements (if ESE interprets landfill boundaries correctly).
- Quarterly groundwater sampling and analysis of above wells has not been initiated to determine the facility's impact on groundwater quality.

RI/FS

- Actual extent of solid waste burial is unclear; contaminant source areas have not been defined.
- Various media have been impacted by landfill operations, but the full extent of contamination has not been delineated (both onsite and offsite).

- The full range of possible contaminants has not been investigated.
- Risk to human health and the environment has not been determined.

6.3 Data Requirements

A series of data gaps were encountered to comply with the requirements for landfill closure or in initiating an RI/FS. For simplicity, data limitations were broken down into three areas:

- Unpermitted Landfill
 - Identify actual boundaries of the permitted landfill.
 - Identify individual solid waste burial cells (e.g., asbestos versus sandblasting grit).
 - Continue monitoring for the two remaining quarters to complete one-year period required by Phase I requirements of the Solid Waste Management Regulations (SWMR).
 - Prepare and submit a separate closure plan.
- Permitted Landfill
 - Identify actual boundaries of the permitted landfill.
 - Identify individual solid waste burial cells.
 - Install upgradient and downgradient wells around perimeter of the 5-acre landfill.

- Institute quarterly sampling of perimeter wells according to Part V of the SWMR for landfill closure.
- Prepare and submit a separate closure plan.

RI/FS

- Identify solid waste burial boundaries (entire site) and contaminant point sources/burial cells.
- Identify extent of known contamination in various media, both onsite and offsite (e.g., cadmium, lead, TOX), as well as the relationship between soil and groundwater contamination.
- Identify potentially additional contaminants in various media (e.g., asbestos, semivolatiles, pesticides/herbicides, all TAL metals).
- Determine potential human and environmental receptors and potential risk to human health and the environment, as well as to construction workers.

6.4 Recommendations for Future Work

The following recommendations were divided into three parts. The first and second parts describe what will be needed to complete closure requirements for the unpermitted and permitted landfill areas. The final recommendation lists the missing field and analytical information to begin completing an RI/FS.

1) Unpermitted Landfill

Conduct geophysical survey to identify boundaries of entire landfill
operation, as well as distinguish between permitted and unpermitted landfills
and individual burial cells.

- Combination of magnetometer and EM-31 will identify heavy metal concentrations in soils and groundwater, and may also delineate solid waste burial boundaries.
- To conduct the geophysical survey, the site should be placed on a 20-ft² grid pattern, and data should be collected on 20-foot centers. Figure 6-1 illustrates the recommended area to be investigated.
- Continue quarterly sampling and analysis of groundwater samples from the existing monitor wells.
 - Analyze for water quality and indicator parameters according to the Phase I requirements of the SWMR.
- After the first year of groundwater monitoring, the mean and variance of
 contaminants detected in the background well should be calculated and
 compared to the contaminants in the downgradient wells. If the
 groundwater was significantly impacted by the landfill, Phase II described in
 Part V of the Virginia SWMR must be implemented.
- Prepare and submit a closure plan that the two landfills (permitted and unpermitted) as separate entities.

2) Permitted Landfill

- Conduct geophysical survey to identify boundaries of entire landfill
 operation, as well as distinguish between permitted and unpermitted landfills
 and individual burial cells.
 - Combination of magnetometer and EM-31 will identify heavy metal concentrations in soils and groundwater, and may also delineate solid waste burial boundaries.

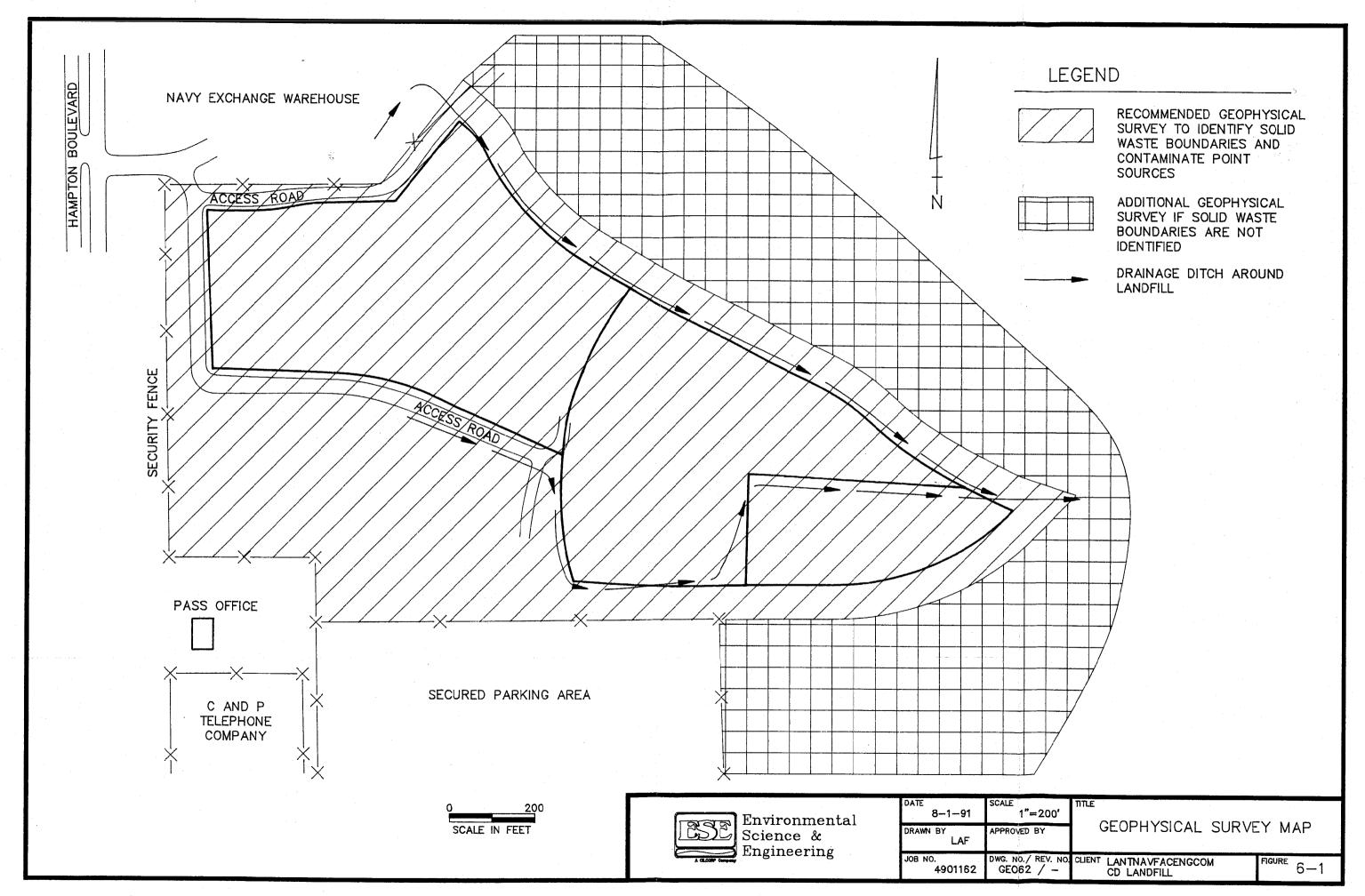
- To conduct the geophysical survey, the site should be placed on a 20-ft² grid pattern, and data should be collected on 20-foot centers. Figure 6-1 illustrates the area to be investigated.
- Install a minimum of three downgradient wells and one upgradient (background) well.
 - Geophysical survey will assist in locating monitor wells and soil borings outside permitted landfill boundaries.
- Conduct a quarterly sampling and analysis of groundwater samples from the above wells.
 - Analyze for water quality and indicator parameters according to Phase I requirements of the SWMR.

3) RI/FS

- Conduct geophysical survey to identify boundaries of entire landfill
 operation, as well as distinguish between permitted and unpermitted landfills
 and individual burial cells.
 - Combination of magnetometer and EM-31 will identify heavy metal concentrations in soils and groundwater, and may also delineate solid waste burial boundaries.
 - Historical records do not delineate the landfill boundaries. By visual evidence during the SI, construction debris was noted outside the drainage ditch. Analytical data from the soil borings confirms offsite contamination. It has not been confirmed that the existing soil mounds noted in the confirmation study separate the two facilities.

- Install monitor wells, and sample surface soil borings and subsurface soil borings to determine the degree and extent of onsite and offsite contamination in soils and groundwater.
 - Surface water and sediment samples should be collected to fully determine the extent of contamination along the migration pathway (drainage ditch).
 - Geophysical survey will assist in locating surface soil borings and monitor wells to determine the full extent of onsite/offsite contamination.
 - Confirm the geophysical survey by installing groundwater monitor wells and soil borings. Soil samples will be collected continuously to 10 feet for laboratory analysis. Additional samples will be taken every 5 feet to the limit of each boring for soil descriptions. The monitor wells will be installed to approximately 35 feet, unless a confining layer is encountered. If so, the boring will not be advanced further to avoid contaminating the lower aquifer. Soil and groundwater samples will be analyzed for TAL metals, pesticides/ herbicides, semivolatiles, and asbestos.
 - Surface soil and groundwater will be analyzed for additional suspected contaminants (e.g., asbestos, TCL, semivolatiles, pesticides/herbicides, TAL metals).
 - Historical records indicate that large quantities of asbestos and semivolatile constituents (e.g., 500 five-gallon containers of petroleum waste by-products) were deposited in the landfill, and plastic packages of pesticides were present during field activities. TAL metal analysis should also be performed due to the sandblasting grit, fly ash, and other inert wastes may contain constituents not analyzed in previous investigations.

• Following completion of onsite investigation, perform risk assessment to determine the potential risk to human health and the environment (baseline risk assessment), as wells as to workers performing any construction.



REFERENCES

- Federal Interagency Committee for Wetland Delineation (FICWD), 1989, Federal

 Manual for Identifying and Delineating Jurisdictional Wetlands. US Government Printing Office, Washington, DC
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- Soil Conservation Service (SCS), 1987, <u>Hydric Soils of the United States</u>, US Government Printing Office, Washington DC
- United States Department of Agriculture (USDA), 1951, Soil Survey Manual,

 Agricultural Handbook 18, US Government Printing Office, Washington, DC
- USDA, 1975, Soil Taxonomy, Agricultural Handbook 436, US Government Printing Office, Washington, DC
- United States Geological Survey (USGS)
- Commonwealth of Virginia Department of Waste Management, 1988, Solid Waste Management Regulations. VR 672-20-10
- Siudyla, E.A., May A.E., Hawthorne, D.W., 1981, <u>Groundwater Resources of the Four Cities Area</u>, Virginia, Virginia Water Control Board, Planning Bulletin 331
- Naval Facilities Engineering Command, 1987, Confirmation Study, Swells Point Naval Complex, CD Landfill

APPENDIX A

Analytical Results from the Confirmation Study

- ANALYTICAL RESULTS REPORT -

Mr. David Goodwin Atlantic Division Code 1143 Naval Facilities Engineering Command Norfolk, VA 23411

Re: Soil Analysis

CAS Commission No. 6094

REPORT DATE/NUMBER: 16 February 1983/35

SAMPLES COLLECTED: 26 January 1983

BY: Navy personnel

SAMPLES RECEIVED IN LAB: 28 January 1983: 0900

ANALYSIS FOR: Moisture %, and Cadmium (Cd)

METHOD OF ANALYSIS: Re: EPA SW-846, Test Methods for

Evaluating Solids Waste, May 1980

Results are on the following page.

If you have any questions or comments concerning this report, please do not hesitate to contact us.

Prepared by:

CENTEC ANALYTICAL SERVICES

David F. Tompkins

Chemist

DFT/mls

Naval Facilities Engineering Command 16 February 1983 Page 2

CAS No.	Description	% Moistur	e Cd (µg/g) (wet wt)	Cd (µg/g) (dry wt)
28420	CD Landfill upstream, Point 1 about 10 yds South of "Navy POL pipeline" sign, not pre-acidified #1 Sediment Collected 1025	60	1.46	2.43
28421	CD Landfill downstream, Point 2 North Branch of Creek n 25 yds above confluence w/South Branch Not pre-acidified #2 Sediment Collected 1045	67	6.46	9.64
28422	CD Landfill downstream, Point 3 South Branch of Creek n 25 yds above confluence w/North Branch Sample not pre-acidified #3 Sediment Collected 1055	50	1.46	2.92

15-1

Mr. David Goodwin Atlantic Division Code 1143 Naval Facilities Engineering Command Norfolk, VA 23411

> Re: Water Analysis

CAS Commission No. 6094

REPORT DATE/NUMBER: 17 February 1983/36

SAMPLES COLLECTED: 26 January 1983

Navy personnel

SAMPLES RECEIVED IN LAB: 28 January 1983: 0900

ANALYSIS FOR: Cadmium (Cd) Total

METHOD OF ANALYSIS: Re: Federal Register, Vol. 41, No. 232

1 December 1976

CAS No.	Description Cd (mg/l)
28423	CD Landfill, upstream, Pt 1 about 10 yds <0.01 South of "Navy POL Pipeline" sign Sample not pre-acidified Sample #1 Collected 1025
28424	CD Landfill downstream, Pt 2 North Branch 0.01 of creek n 25 yds above confluence w/South Branch, Not pre-acidified Sample #2 C. 1045
28425	CD Landfill downstream Pt 3 South Branch <0.01 of Creek n 25 yds above confluence w/North Branch Sample #3 Collected 1055

If you have any questions or comments concerning this report, please do not hesitate to contact us.

Prepared by:

CENTEC ANALYTICAL SERVICES

David F. Tompkins Chemist

Mr. David Goodwin Atlantic Division Code 1143 Naval Facilities Engineering Command Norfolk, VA 23411

Re: Sediment Analysis

CAS Commission No. 6094

REPORT DATE/NUMBER: 12 May 1983/70

SAMPLES COLLECTED: 29 April 1983: 0907, 0920, 0912, 0917

BY: Navy personnel

SAMPLES RECEIVED AT LAB: 01 May 1983: 0800

ANALYSIS FOR: % Moisture and Cadmium (Cd)

METHOD OF ANALYSIS: Re: Federal Register, Vol. 44, No. 233

03 December 1979

CAS No.	Description	% Moisture	Cd (µg/g) (dry wgt)		
29533	CD Landfill North Bra	anch 63.5	9.37		
29534	CD Landfill South Bra	nch 57.6	4.88		

If you have any questions or comments concerning this report, please do not hesitate to contact us.

Prepared by:

CENTEC ANALYTICAL SERVICES

John C. Johnson Chemist

JCJ/mls

Mr. David Goodwin Atlantic Division Code 1143 Naval Facilities Engineering Command Norfolk, VA 23411

Re: Water Analysis

CAS Commission No. 6094

REPORT DATE/NUMBER: 12 May 1983/71

SAMPLES COLLECTED: 29 April 1983: 0912, 0917

BY: Navy personnel

SAMPLES RECEIVED AT LAB: 01 May 1983: 0800

ANALYSIS FOR: Cadmium (Cd)

METHOD OF ANALYSIS: Re: Federal Register, Vol. 41, No. 232,

1 December 1976

CAS No. Description Cd (mg/l)

29535 CD Landfill North Branch of Creek 0.02

29536 CD Landfill South Branch of Creek 0.01

If you have any questions or comments concerning this report, please do not hesitate to contact us.

Prepared by:

CENTEC ANALYTICAL SERVICES

John C. Johnson

John C. Johnson

Chemist

JCJ/mls

Mr. David Goodwin Atlantic Division Code 1143 Naval Facilities Engineering Command Norfolk, VA 23511

> Re: Sediment Analysis

> > CAS Commission No. 6094

REPORT DATE/NUMBER: 26 July 1983/110

SAMPLE COLLECTED: 07 July 1983: 1320 & 1327

BY: Wallmeyer, Miller

SAMPLE RECEIVED AT LAB: 09 July 1983: 1300

ANALYSIS FOR: Moisture and Cadmium (Cd)

METHOD OF ANALYSIS: Re: Federal Register, Vol. 41, No. 232,

1 December 1976

CAS No. Description % Moisture Cd (µg/g) (dry wt basis)

		**	
	North Branch of Creek CD Landfill #681	52.0	9.85
30753	South Branch of Creek CD Landfill	46.5	14.3

If you have any questions or comments concerning this report, please do not hesitate to contact us.

Prepared by:

CENTEC ANALYTICAL SERVICES

David F. Tompkins

Chemist

DFT/mls

Enclosure (1)

Mr. David Goodwin Atlantic Division Code 1143 Naval Facilities Engineering Command Norfolk, VA 23511

> Re: Water/Silt Analysis

CAS Commission No. 6094

REPORT DATE/NUMBER: 17 November 1983/176

SAMPLES COLLECTED: 31 October 1983: 1300

> BY: H.W. Miller

SAMPLES RECEIVED IN LAB: 11 November 1983: 1600

ANALYSIS FOR: Moisture (%) and Cadmium (Cd)

METHOD OF ANALYSIS: Re: Federal Register, Vol. 41, No. 232,

1 December 1976

CAS No.	Des	cription	5	Moisture (%)	Cd (mg/l)	Cd , (µg/g)
32664	From	North branch of creek @ (landfill #3304-1	CD	86.6		115*
32265	From area	North branch of creek @ Clandfill #3304-2	CD	•	<0.01	
32666	From area	South branch of creek @ Clandfill #3304-3	CD ₁	32.4		0.71*
32667	From area	South branch of creek @ Clandfill #3309-4	CD		<0.01	•

^{*} Dry weight basis.

If you have any questions or comments concerning this report, please do not hesitate to contact us.

Prepared by:

CENTEC ANALYTICAL SERVICES

David F. Tompkins

Chemist

DFT/mls

Mr. David Goodwin Atlantic Division Code 1143 Naval Facilities Engineering Command Norfolk, Virginia 23511

> Re: Water/Sediment Analysis CAS Commission No. 6094

REPORT DATE/NUMBER: 25 April 1984/245

SAMPLES COLLECTED: 13 April 1984: 0943

BY: H.W. Miller

SAMPLES RECEIVED IN LAB: 19 April 1984: 1130

ANALYSIS FOR: % Moisture and Cadmium (Cd)

METHOD OF ANALYSIS: Re: Federal Register, Vol. 41, No. 232,

1 December 1976; EPA SW-846, Test Methods for Evaluating Solid Wastes

May 1980

CAS No	. Description	Moisture (%)	Cd (µg/g) (Cd mg/l)
37551	CD Landfill Sediment South Branch of Creek PWC Sample 4104-3	37.2	1.24*	
37552	CD Landfill water South Branch PWC Sample 4104-4			0.02
37553	CD Area Landfill Sediment North Branch of Creek PWC Sample 4104-1	47.0	8.17*	
37554	CD Area Landfill Water North Branch of Creek PWC Sample 4104-2			0.02

^{*} Dry Weight Basis

If you have any questions or comments concerning this report, please do not hesitate to contact us.

Prepared by:

CENTEC ANALYTICAL SERVICES.

David F. Tompkins

Chemist

Mr. David Goodwin Atlantic Division, Code 1143 Naval Facilities Engineering Command Norfolk, Virginia 23511

RE: Soil Analysis

CAS Commission No. 6094

REPORT DATE/NUMBER: 17 December 1984/358

SAMPLES COLLECTED: 31 October 1984: 0940: 0945

BY: U. S. Navy Personnel

SAMPLES RECEIVED IN LAB: 06 November 1984: 0830

ANALYSIS FOR: Percent Moisture and Total Cadmium (Cd)

METHOD OF ANALYSIS: ASTM; E203-64, 1973 Book of ASTM Standards

EPA SW-846 Test Methods for Evaluating Solid Wastes,

May 1980

CAS No.	Description	% Moisture	Cđ (µg/g*)	
42517	Sample #4305-1	31.2	7.46	_
42518	Sample #4305-2	50.3	26.4	

^{*} Dry Weight Basis

Should you have any questions or comments concerning this Report, please advise.

Prepared by:

CENTEC ANALYTICAL SERVICES

Cheryl M. Daniel, Laboratory Manager

CMD; dlf

Enclosure(1)

JTC Environmental Consultants, Inc.

Location: PWC-noyock	Da	ate of R	eceipt: D.	2-85 I	Turnaround:	routex	
Date: 1-2-86 Report No. 188	t	o Naval	Facilities	Engineerin	ng Command,	Norfolk,	Virginia
JTC Data Report No. 86-004 Tab	1e3	3					

NAVY	JTC				ANALYSIS	PARAMETER		
SAMPLE ID	SAMPLE ID	Total Cd	EPTox Cd ug/L					
#5331-1	12-1908	16 mg/ky	321	CD Ran North Buch		·)
-2	-1809	14 ug/L		CD Las		.d=L-		
-3	-1810)_mg/kg	24	on Lan	anch So			
-4	-1811	18 mg/L		C. P. La South Bri	nefill net wa	ica) 1
					•	•	•	

APPENDIX B

Dedicated Soil Boring Log Sheets

		TNIC	1 00			and the second s				
R	UK.	ING	LUl	כ						
DDO	ICOT	NO 4001	160 E T	1 E NO	0200	DODING NO. MIL 1				1 OF 6
				LL NU	0793	BORING NO: MW-1	-			AME: CD Landfill
		AN: 2/25				DATE FINISHED: 2/25/91	- ^{† 1} E	LU bl		GIST: M. Skrabacz
		George S				NORTH: N/A	-			AST: N/A
1						GWL DATE/TIME: 2/25/91	-			PTH: <u>7.0 feet</u>
					l low-	stem auger DRILL EQUIP: AT	V	_		UIP: ORS
CUN	RACI	OR: <u>Hara</u>	din-Huber T	` T				CHE	CKED	BY: N/A
ELEV (FT)	DEPTH (FT)	SAMPLE TYPE AND NO.	SPT BLOWS PER (0.5')		PROFIL	DESCRIPTION	USCS	ORGA	ORS	REMARKS
			, ,		Ē			FID	PID	
	0.00 -	SS1	1-7			TOPSOIL				
			9-8			SILTY SAND: Yellow-brown SAND with silt;	SM			
	-					moist				11
	-									
10.0	-5.00 -	SS2	5-6							
			8-7	3%						
▼.										Groundwater © 7′
		SS3	3-3	- 50 20 22						Soil becomes grey ♥ 7.5'
			6-6							
5.0	-10.00			\$70 50 50						4
				2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2						
		SS4	0-0							
			4-10							Orange staining © 14.5°
0.0	-15.00 -									i je sa
			-	\$ \\ \frac{\frac{1}{2}}{2}						
					薑			1		
		SS5	4-10						-	
			3-3	1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2			-	-		
5.0	-20. 00 -					CLAY: Dark grey CLAY; plastic, wet.	СН			Clay content increases
-		SS6	3-3					-		- 40
										Sail is dark grey © 19-20'
			1							Bottom of boring © 23.5′

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E	OR.	ING	LOC	<u> </u>		
						PAGE 2_ 0F 6
i				LE N	0:0793	-2 log BORING NO: MW-2 PROJECT NAME: CD Landfill
i		AN: <u>2/25</u>				DATE FINISHED: 2/25/91 FIELD GEOLOGIST: M. Skrobacz
-		George S	. "			NORTH: N/A EAST: N/A
GRO	UND S	URFACE	ELEV.	: 12.1	l6 feet	GWL DATE/TIME: 2/25/91 GWL DEPTH: 5.0 feet
DRI	LLING	METHO	D: 6-1/4	1" ID I	Hollow	stem auger DRILL EQUIP: ATV GWL EQUIP: ORS
CON	TRACT	OR: Hard	din-Huber	·	T	CHECKED BY: N/A
ELEV (FT)	DEPTH (FT)	SAMPLE TYPE AND NO	SPT BLOWS PER (0.5')	REC (FT)	中R0ドH―	DESCRIPTION DESCRIPTION DESCRIPTION DESCRIPTION DESCRIPTION S C S VOLATILE ORGANIC VAPORS (ppm) REMARKS
	0.00 -				Ē	FID PID
	0.00	SSI	4-7			TOPSOIL
10.0			4-7			SILTY SAND: Yellow-brown SAND with silt; SM moist; trace gravel
10.0	ļ ·					morse, er dee graver
•	-5.00					Groundwater ⊘ 5′
	-3 00 -	SSZ	7-3			
			7-3		72-2- 2-2-2 2-2-2	
- 5.0						Soil becomes grey ⊘ 8′
		SS3	3-3			3011 Decomes grey 4 8
			3-3			
	-10,00 -					
0.0				 		
		SS4	8-11			
			16-16			
	-15.00					
				1		
- 5.0				ļ		
		SS5	1-3			
			4-4			Organics present at sand-clay interface
	J _{-20 00} —		1 7			CLAY: Dark grey CLAY, plastic; wet. CH Bottom of boring © 20'

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	В	OR:	ING	LO	3									
										PAGE		3	OF 6	
	PRO	JECT	NO: <u>4901</u>	<u>162</u> FI	LE N	0 : <u>0793</u>	BORING NO: MW-3		PF	ROJE	CT NA	AME:	CD Landfill	
	DATE	E BEG	AN: <u>2/22</u>	/91			DATE FINISHED: 2/22	/91	FIE	LD GI	EOLOC	GIST:	M Skrabacz	
	DRI	LER	Mark Fle	etcher			NORTH: N/A	·			Er	AST:	N/A	
	GRO	JND S	URFACE	ELEV.	: 11.6	51 Feet	GWL DATE/TIME: 2/22/	/91	,	GWL	_ DEF	PTH:	5.5 feet	
	DRI	LING	METHO	D: 6-1/4	1" ID	Hollow	-stem auger DRILL E	EQUIP: ATV		GWI	L EQI	UIP:	ORS	
	ļ.		OR: Hand							_		BY:		
						Р								
	רורע	DEDTI	SAMPLE	SPT	DEC	ひぶつにエーゴに			Ŋ	ORGA	TILE NIC			
	ELEV (FT)	(FT)	SAMPLE TYPE AND NO.	SPT BLOWS PER (0.51)	REC (FT)) F-F	DESCRIPTION				ORS		REMARKS	
			טאו שאווז.	(0.51)					S	(pp	1111)			
		0.00				E				FID	PID			
		0.00 —	SS1	2-8			SILTY SAND Black SAND with silt; or	nganic;	SM	3			· · · · · · · · · · · · · · · · · · ·	
	- 10.0			7-5			moist (fill)		5H					
							SILTY SAND Dark brown SAND with s	ilti	SM		·			
			 						SM					
	Y	-5.00 -	SSZ	3-3	-		SILTY SAND: Yellow-brown SAND with silt; moist			1.5		Gro	undwater © 5.5°	
				4-4			2111/ 1110121							
	5.0							İ			t.			
			SS3	3-2										
			333	2-2	-					8				
		-10.00 -	-	2-2				. •						
					ļ									
	- 0.0										-			
			SS4	1-2						16				
		15.00		2-2										
		-15 00 -												
	5.0													
			SS5	4-6						0				
				7-8								-		
,		-20.00 -												
	10.0				<u> </u>		SAND: Light grey SAND; trace silt;	uot						
	10.0						onino Light grey onino, trace sitt.	WCt.	SP					
			SS6	9-10	<u> </u>									
			330	ļ						2				
	<u> </u>	 -25.00		15-20								Bot	tom of boring © 25	i <i>'</i>

E	30R	ING	LOC	j		
PRO	HECT	NN 4901	162 FT	I F N	I n - 0797	PAGE 4 OF 6 -4 log BORING NO: MW-4 PROJECT NAME: CD Landfill
1		AN: 2/26		L. L. 11	10 · <u>01</u> 30	DATE FINISHED: N/A FIELD GEOLOGIST: M. Skrobacz
		Mark Fle				NORTH: N/A EAST: N/A
GRO	UND S	URFACE	ELEV.	: 16.0	68 Feet	GWL DATE/TIME: 2/26/91 GWL DEPTH: N/A
į.					Hollow	stem auger DRILL EQUIP: ATV GWL EQUIP: ORS
CON	ITRACT	OR: Hand	lin-Huber T	T		CHECKED BY: N/A
ELEV (FT)	DEPTH (FT)	SAMPLE TYPE AND NO	SPT BLOWS PER (0.5')	REC (FT)	PROFI-	DESCRIPTION DESCRIPTION DESCRIPTION DESCRIPTION DESCRIPTION DESCRIPTION S VOLATILE ORGANIC VAPORS (ppm) REMARKS
	0.00				Ë	FID PID
	0.00 -	SS1	3-15			TOPSOIL/ROOTMAT Field blank taken from
- 15.0			18-5 25	5 .		SILTY SAND: Black SAND with silt, (Fill)
						SM Miscellaneous fill cons of glass, ash, metals,
						and concrete
	-5 00 -	SS2	21-21			CLAY: Brown, lean CLAY; plastic; very moist (Fill)
- 10.0			3-4			
		SS3	3-2	ļ		
	-10.00 -		3-4			SILTY SAND Yellow-brown SAND with silt; wet
- 5.0	, .					
J. U						
		SS4	2-2			
	-15 00 -		2-2			
	10.00					
0.0						
		SS 5	1-2	ļ		
			1-1			
	-20.00	,				
- 5.0						
		cer	13.16			
		SS6	13-12 9-12			SAND: Grey SAND; fine; wet
L			<u> </u>	1		30 Ton 31 But Hig 4 23

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В	OR:	ING	LOG						-	
								PAGE	•	<u>5 OF 6</u>
PRO	JECT	NO: <u>4901</u>	162 FIL	E NO	0 793	BORING NO: MW-5	PI	ROJE	CT NA	AME: CD Landfill
DATI	E BEG	AN: 2/20	/91			DATE FINISHED: 2/21/91	FIE	LD G	EOLO	GIST: M. Skrobacz
DRI	LER:	George S	Smith			NORTH: N/A			E	AST: N/A
GRO	JND S	URFACE	ELEV.:	10.1	O feet	GWL DATE/TIME: 2/21/91		GW	L DEF	PTH: 7.5 feet
DRI	LLING	METHO	D: 6-1/4"	ID H	Hollow	-stem auger DRILL EQUIP: ATV		GW	L EO	UIP: ORS
		OR: Hand						- CHE	CKED	BY: N/A
					P			VOLA	ATILE	
ELEV	חבסדון חבסדון	SAMPLE	SPT	סבר	PROLHJU		Ų	ORGA	ANIC	
(FT)	(FT)	SAMPLE TYPE AND NO	SPT BLOWS PER (0.5')	REC (FT)	F	DESCRIPTION		Ι.	PORS (REMARKS
		737.0	(0.5')		1		5	\ \P\)III /	
10.0	0.00 -				<u> </u>			FID	PID	
10.0	0.00	SS1	2-4			TOPSOIL/ROOTMAT		35		
			6-6			SILTY SAND Yellow-brown SAND with silt	SM			
						and clay; very moist (fill). CLAY: Blue-green to black CLAY; plastic;				Miscellaneous fill
					1717	moist (fill)	СН			consists of asphalt,
	F 00					SILT: Dark brown silt; organic.	OL			concrete, and gravel
5.0	-5.00	SS2	1-1			CANDY CTLT D. L.L	UL	34		
			1-1		ZHH.	SANDY SILT Dark brown to yellow-brown SILT with sand; trace clay; moist (fill).	ML			
Y						CAMP				Groundwater 0 7.5°
		SS3	4-6			SAND: Yellow-brown SAND; trace silt; wet	SP	140		
			4-3							
- 0.0	-10.00 -									
		SS4	4-3					6.5		
			5-12							
- 5.0	-15.00 -									
		SS5	3					0		
			4-4							
10.0	-20.00 -									
	-	-		-		CLAY Grey to yellow-brown CLAY; plastic;	СН			Bottom of head a of
	_					CLAY Grey to yellow-brown CLAY; plastic;	LH		<u> </u>	Bottom of boring ⊘ 25′

			TNIC	1 01		· · · · · · · · · · · · · · · · · · ·					
	_DI	UK.	ING	LU	J				PAGE		6 OF 6
Р	ROJ	ECT	NO : 4901	162 FI	LE N	10 : <u>079</u> 3	-6 log BORING NO: MW-6				AME: CD Landfill
ם	ATE	BEG	AN: 2/26	/91			DATE FINISHED: 2/26/91	FIE	LD GI	EOLO	GIST: M Skrobacz
ם	RIL	LER:	Mark Fle	tcher			NORTH: N/A			E	AST: N/A
G	ROU	ND S	URFACE	ELEV.	: 12.	14 fee	GWL DATE/TIME: 2/26/91		GUI	DEF	PTH: 9.8 feet
	RIL	LING	METHOD): <u>6-1/</u>	1" ID	Hollow	estem auger DRILL EQUIP: ATV		_ GWI	L EOI	UIP: ORS
C	ONT	RACT	DR: <u>Hard</u>	in-Huber	•				CHE	CKED	BY: N/A
EL (F	EV T)	DEPTH (FT)	SAMPLE TYPE AND NO	SPT BLOWS PER (0.5')	REC (FT)	PROLIL	DESCRIPTION		ORGA	ORS	REMARKS
		0.00				<u> </u>			FID	PID	
		U.UU. —	SS1	2-1			TOPSOIL/ROOTMAT				
	10.0			2-2			SILT Black SILT with SAND; moist (fill)	ML			
	LO.U	_									
					ļ		CLAY Grey, lean CLAY with sand; moist	CL			·
		-5,00 -									Composite sample
		-	SS2	2-2							collected from 5–9′
	5.0	-		2-2		777777		1			
	3.0		-		ļ		SILT Brown silt; organic; wet (fill)	OL.		-	
		-					CLAY: Brown, lean CLAY with sand; moist	CL			
	¥	-10.00 -			-						Groundwater ♥ 9.8′
	·	-			-						
	0.0	-					CAND C	-			
		-	SS3	2-3			SAND: Grey to reddish-yellow SAND; trace silt; wet	SP		,	
		-		3-6	-						. *
	-	-15.00 -									
		-		·							
-	5.0	-	-		-						
			SS4	-WOH	-						
		-									
	-	-20.00 -									
		-									
<u> </u>	.0.0										
		-	SS5	8-5							
				4-6	<u> </u>		CLAY Grey CLAY interbedded with sand; plastic	СН			Bottom of boring © 25′
	 J.	-25.00-			1	VIIIII)		1		L	

/ A

APPENDIX C

Actual Groundwater Monitor Well Construction Diagrams

MONITOR WELL NO. MW-/	DATEDATE
PROJECT CD forstul	INSTALL BY ## T
TYPE OF RIG ATV	
	PROTECTIVE MANHOLE COVER
	PROTECTIVE MANNOLE COVER
	LOCKING WELL CAP MASTER LOCK NO
GROUND SURFACE —	MASTER LUCK NO.
\	TOP OF RISER
TYPE OF BACKFILL	
ment grent AROUND RISER PIPE	, , , , , , , , , , , , , , , , , , ,
	TYPE AND SIZE 3 "OF PIPE
	SLOT SIZE O/
	SLOT SIZE
4.0 DEPTH TO SEAL	
\ \\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	
Pentonty MATERIAL OF	
DEPTH OF GRAVEL	
SAND PACK	
	TOP OF SCREEN 8,0
→	 % ≪
₩ _	
_	
	SEDIMENT TRAP NA
230 TOTAL WELL DEPTH	SEDIMENT TRAF
	INSPECTED BY: M. Maylan



PROJECT CL Blandfill	
	INSTALL DI
TYPE OF RIG トナン	
	PROTECTIVE MANHOLE COVER
	LOCKING WELL CAP MASTER LOCK NO.
GROUND SURFACE	
\	TOP OF RISER
"/"\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	NO.
ment grown AROUND RISER PIPE	12000
ment grown AROUND RISER PIPE	8
	OF PIPE
AS A	SLOT SIZE
	3201 3122
DEPTH TO SEAL MATERIAL	
mai Elliat	
TYPE OF SEAL OF	<u>©</u> ≪
Buchet	
U.D DEPTH OF GRAVEL	
SAND FACE	
253.47	TOP OF SCREEN
33 <u>I—</u>	
	→
20.0 TOTAL WELL DEPTH	SEDIMENT TRAP
TOTAL WELL DEPTH	(\\\
Y ,	
luo.	PECTED BY: Mr. Ghylan
INS	1.20120 011
	· · · · · · · · · · · · · · · · · · ·



Environmental Science & Engineering, Inc.

MONITOR WELL NO. MW-3	DATE 2/22/9/
PROJECT CD fond Full	INSTALL BY
TYPE OF RIG HSA	
	PROTECTIVE MANHOLE COVER
	LOCKING WELL CAP
GROUND SURFACE -	MASTER LOCK NO.
	TOP OF RISER
	- VII
TYPE OF BACKFILL AROUND RISER PIPE	
9	TYPE AND SIZE 2 PUC
1	
	SLOT SIZE
DEPTH TO SEAL	
A TYPE OF SEAL	
Bentoute MATERIAL	
DEPTH OF GRAVEL	
SAND PACK	5,0
	TOP OF SCREEN 716 250
X	
25.0	1114
TOTAL WELL DEPTH	SEDIMENT TRAP 1/1/T
	11.2/111
	INSPECTED BY: M. Ghrofarz



Environmental Science & Engineering, Inc.

TYPE OF RIG PROTECTIVE MANHOLE COVER LOCKING WELL CAP MASTER LOCK NO. TOP OF RISER TYPE AND SIZE // PV OF PIPE SLOT SIZEO TYPE OF SEAL AROUND RISER PIPE OF PIPE SLOT SIZEO TYPE OF SCREEN // O II By 5 INSPECTED BY:	MONITOR WELL NO. MW-7	DATE
GROUND SURFACE LOCKING WELL CAP MASTER LOCK NO. TOP OF RISER TYPE OF BACKFILL AROUND RISER PIPE OF PIPE OF PIPE TYPE AND SIZE	PROJECT CD familful	INSTALL BY 31971 FIFT
GROUND SURFACE LOCKING WELL CAP MASTER LOCK NO. TOP OF RISER TYPE OF BACKFILL AROUND RISER PIPE SO SO OF PIPE SLOT SIZE OF PIPE SLOT SIZE OF PIPE TYPE AND SIZE SLOT SIZE OF PIPE TYPE OF SEAL SEDIMENT TRAP INSPECTED BY: MASTER LOCK NO. TYPE AND SIZE TYP	TYPE OF RIG	
GROUND SURFACE LOCKING WELL CAP MASTER LOCK NO. TOP OF RISER TOP OF RISER TYPE AND SIZE		
TYPE OF BACKFILL AROUND RISER PIPE TYPE AND SIZE OF PIPE SLOT SIZE JOHN MATERIAL TYPE OF SEAL MATERIAL TYPE OF SEAL OF OF SCREEN JO. II DEPTH OF GRAVEL/ SAND PACK II DEPTH OF GRAVEL/ SAND PACK II DEPTH OF SCREEN JO. II DEPTH OF SCREEN JO. SEDIMENT TRAP INSPECTED BY: MALLER INSPECTED BY: MALLER TOP OF RISER TOP OF RISER TYPE AND SIZE II PIC SEDIMENT TRAP MALLER INSPECTED BY: MALLER TOP OF SCREEN JO.		
TYPE OF BACKFILL AROUND RISER PIPE TYPE AND SIZE OF PIPE SLOT SIZE JOHN MATERIAL TYPE AND SIZE OF PIPE SLOT SIZE JOHN MATERIAL TYPE AND SIZE OF PIPE SLOT SIZE JOHN MATERIAL TYPE AND SIZE OF PIPE SLOT SIZE JOHN MATERIAL TYPE AND SIZE OF PIPE SLOT SIZE JOHN MATERIAL TOP OF SCREEN JO. II Sug 5 INSPECTED BY: MALLEY INSPECTED BY: MALLEY MALLEY INSPECTED BY: MALLEY MALLEY INSPECTED BY: MALLEY MALLEY MALLEY MALLEY INSPECTED BY: MALLEY	CROIMO SURFACE	LOCKING WELL CAP MASTER LOCK NO.
TYPE OF BACKFILL AROUND RISER PIPE TYPE AND SIZE OF PIPE SLOT	SHOOLID SOM AGE	TOP OF RISER
TYPE AND SIZE		- VIII
TYPE AND SIZE		
TYPE AND SIZE		
SLOT SIZEO]	ement grown AROUND RISER PIPE	
DEPTH TO SEAL MATERIAL TYPE OF SEAL 7. 9 € 1 SAND PACK 11 By 5 TOP OF SCREEN 10.0 INSPECTED BY: M. Markey		OF PIPE
DEPTH TO SEAL MATERIAL TYPE OF SEAL 7. 9 € 1 SAND PACK 11 By 5 TOP OF SCREEN 10.0 INSPECTED BY: M. Markey		SLOT SIZE
TYPE OF SEAL 7.961 DEPTH OF GRAVEL/ SAND PACK 11 Degs TOP OF SCREEN 10.0 SEDIMENT TRAP INSPECTED BY: M. Shaday	DEPTH TO SEAL	
7.961 DEPTH OF GRAVEL/ SAND PACK TOP OF SCREEN 10.0 SEDIMENT TRAP WAS INSPECTED BY: M. Charles	\ \\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	
TOP OF SCREEN 10.0 SEDIMENT TRAP WAS INSPECTED BY: M. Shakey	Bentonte TYPE OF SEAL	
TOP OF SCREEN 10.0 SEDIMENT TRAP WAS INSPECTED BY: M. Shakey	DEPTH OF CRAVE!	
SEDIMENT TRAP WA	7. 9 C/ SAND PACK	
SEDIMENT TRAP WA	11 8455	TOP OF SCREEN 10.0
INSPECTED BY: M. Sharlary		
INSPECTED BY: M. Sharlang		
INSPECTED BY: M. Sharlang		
INSPECTED BY: M. Sharlary		
INSPECTED BY: M. Sharlang		
INSPECTED BY: M. Sharlang		
INSPECTED BY: M. Sharlang		
INSPECTED BY: M. Sharlary	25,0 TOTAL WELL DEPTH	SEDIMENT TRAP
		//\\\Y//
		INSPECTED BY: My Sharlang
		Fnvironmental



Science & Engineering, Inc.

MONITOR WELL NO. MW 5	DATE _ 2/2/19/
PROJECT CD Landfell	INSTALL BY 1+1+I
TYPE OF RIG CME 45 Skid Rig	
	PROTECTIVE MANHOLE COVER
	LOCKING WELL CAP
GROUND SURFACE	LOCKING WELL CAP MASTER LOCK NO.
	TOP OF RISER
	VIII.
Liment grow AROUND RISER PIPE	
	TYPE AND SIZE JU PUC
	SLOT SIZE
	SLOT SIZE
MATERIAL DEPTH TO SEAL	
Bentonte MATERIAL 00	
Bentomte MATERIAL 00	
DEPTH OF GRAVEL	
SAND PACK	
	TOP OF SCREEN 7.0FT
	SEDIMENT TRAP NA
33.0 ft TOTAL WELL DEPTH	VIII WES
, , , (i	
INSPEC	CTED BY: Mark Sproface
TYPICAL MONITOR WELL	Environmental Science &
	Engineering, Inc.

MONITOR WELL NO. MW-6	DATE
PROJECT_/D land Cill	INSTALL BY ME
TYPE OF RIG AT).	
	PROTECTIVE MANHOLE COVER
CDOIND SUPEACE	LOCKING WELL CAP MASTER LOCK NO.
GROUND SURFACE	
	TOP OF RISER
OF BACKELL - 100	
Covent front AROUND RISER PIPE)
	TYPE AND SIZE SUPPLE
	SLOT SIZE 101
	SLOT SIZE _ 1 2/
DEPTH TO SEAL NO.	
MATERIAL DO	
Type OF SEAL NO MATERIAL	
DEPTH OF GRAVEL	
SAND FAOR	10.3/
	TOP OF SCREEN
—	
3	
	 ₹}}:
∅ ं—	
	SEDIMENT TRAP N/A
TOTAL WELL DEPTH	
	N. H. I.
· · · · · · · · · · · · · · · · · · ·	NODECTED BY. That III
	NSPECTED BY: 711. Global



Environmental Science & Engineering, Inc.

APPENDIX D

Wetland Soil and Vegetation Descriptions

DATA FORM ROUTINE ONSITE DETERMINATION METHOD¹

Field Investigator(s): R.G. Mart	in		Date:2/2	26/91	
Project/Site: CD Landfill Applicant/Owner: US Navy (No		- State: VA	_ County: Cit	y of Norf	olk
Applicant/Owner: US Navy (No	riolk) P	iant Community #/Na	ame: <u>North</u>	Ditch/wet	land
Note: If a more detailed site descript	ion is necessary,	use the back of data	a form or a field r	notebook.	
Do normal environmental conditions		community?			
Yes No x_ (If no, explain					
Has the vegetation, soils, and/or hyd		ficantly disturbed?			
Yes $\underline{\hspace{1em}}^{\hspace{1em} ext{X}}$ No $\underline{\hspace{1em}}$ (If yes, explain	on back)	1- 11	0h 1 : :	1 01-	
	<u>Mac</u>	de_land_soils/	Channelized	Creek	
	VE	GETATION			
	Indicator			Indicator	
Dominant Plant Species	Status Strati	m Dominant Plant		Status	Stratum
1. Phragmites australis		11	· · · · · · · · · · · · · · · · · · ·	<u> </u>	
2. Baccharis halimifoli		12	· · · · · · · · · · · · · · · · · · ·	<u> </u>	
3 Salix nigra	FACW+ 1	13			
▲ Liquidambar styracif	lua FAC 1	14			
5. Juncus effusus	FACW+ 1	15			
6		16			
7.		17	<u> </u>	<u> </u>	
8					
9		19	· ·		
10	·	20			·
Percent of dominant species that a	re OBL. FACW :	and/or FAC 100°	7,		
Is the hydrophytic vegetation criteri					
Rationale:					
All observed plants	FACW or FAC	- most are FA	CW		
		SOILS			
Series/phase: Made land	· · · · · · · · · · · · · · · · · · ·	Subgroup	p: ²		······································
Is the soil on the hydric soils list?	Yes - No	Undetermi	nedx		
Is the soil a Histosol? Yes	No <u>x</u> Histic	epipedon present?	Yes No _	<u> </u>	
Is the soil: Mottled? Yes x	No Gleye	ed? Yes N	0 <u>X</u>		
Matrix Color:	M	ottle Colors:			
Other hydric soil indicators:					
Is the hydric soil criterion met? Ye	es No _	<u>X</u>			
Rationale:					
soils very disturbed	<u>i-nave not d</u>	<u>evelopea nyari</u>	c cnaracter:	ISTICS	
	H'	YDROLOGY			
Is the ground surface inundated?	Ves No	x Surface wat	er death: N/	Α	
is the soil saturated? Yes \underline{x}		Surface Wall	ei deplii. ———		
Depth to free-standing water in pit/s	soil probe hole:	2"			
List other field evidence of surface	inundation or soi	saturation			
		in a creek bed	1		
Is the wetland hydrology criterion n					
Rationale:					
Rationale:standing water at 2"					
JURIS	SDICTIONAL DE	TERMINATION AND	RATIONALE		
Is the plant community a wetland?	Vac - N	•			
Rationale for jurisdictional decision		<u> </u>			
Plants and hydrology	Dresent-co	ils will form	given time		
			~		
1 This data form can be used for th	e Hydric Soil Ass	essment Procedure	and the Plant Co	ommunity	
Assessment Procedure.	·				
² Classification according to "Soil T	axonomy."				

	22 / ROS	71705	P. LAG		₽	الله المارية	MUNITY TYP creek TION DESCRI	bed	N:	£		
2/26			AA-2 1 AB-2	-		OR	DER NAME:	R.G.	Martin			
DEPTH	COLOR			TEXTU	RE		MOTTL					
	•)		PC	NDING: _	
0-4	10 YR 3/1		sandy s	ilt lo	am		-		-	FI	OODING: _	
4-12	10 YR 5/8	1	sandy s	ilt			10 TR 6/2		-	MC	RPHOLOGICA	L:
12-20	10 YR 6/2		silty	sand			-	-				
	·									07	HER:	
										Sλ	T. DEPTH	1"
										ΜŊ	TER DEPTH	2"
			:							CI x	ASSIFICATI HYDRIC NONHYDRIC	
<u>VEGET</u> Speci	ration Les					Cover	EPA Cover Clas 1 = 1-5% 2 = 6-15% 3 = 16-25%	s Meth	odology		4 = 26-50% 5 = 51-75% 6 = 76-95% 7 = 96-100	COVE
Canop	ÞΥ											
Shrub	o/Saplings											
Herba	aceous			· · · · · · · · · · · · · · · · · · ·			Woody Vine	es				
Notes Lates	s t Rainfall		unkno	own	L						-	

DATA FORM ROUTINE ONSITE DETERMINATION METHOD¹

Field Investigator(s): R.G. Mar	tin				Date:	2/26	/91	·
roject/Site CD Landfill			State:	VA	County:	City	of Norf	olk
pplicant/Owner: US Navy		Plant	Commu	nity #/Nam	ne: <u>Nor</u>	th Di	ch/Upla	ınd
lote: If a more detailed site descrip	OTION IS NOC	essary, use 	e the bac	K OT data to	orm or a 11	ею note 	9000K. 	
To normal environmental conditions $(esN No _x (ff no, explains the vegetation, soils, and/or hy (es _x No (ff yes, explains the vegetation))$	n on back) drology bee n on back)	n significa	intly distu	rbed?	h non-	native	e compon	ients
			TATION	,115				
Dominant Plant Species	Indicator Status	Stratum	Domina	nt Plant Sp	pecies		Indicator Status	Stratum
1. Unidentified grass	?	6	11:					
2			12					
3.								
4.	<u> </u>		14					
5			15	***************************************				
6	<u> </u>		16. —					
7.			17				· ——	
8.								
9		·	19	<u> </u>				
10			20					
Series/phase: Is the soil on the hydric soils list? Is the soil a Histosol? Yes Is the soil: Mottled? Yes Matrix Color: 5 YR 5/1 10 Other hydric soil indicators: Is the hydric soil criterion met? Rationale: unnatural soils-te	Yes	_ Gleyed? Mottle	Yes Colors:	NoN/	/ <u>A</u>	· · · · · · · · · · · · · · · · · · ·		, 10!!
dimatdrai soris-t	ор то с		ROLOGY		TTTT III	acerra	ar berow	/ 10
Is the ground surface inundated?	Voc				doath:			
Is the soil saturated? Yes			Sun	ace water	debru: —			
Depth to free-standing water in pit			None	<u>.</u>				
List other field evidence of surface			turation.	None				
Is the wetland hydrology criterion Rationale:								
No hydrological						 		
JUR	ISDICTION	AL DETE	RMINATI	ON AND I	RATIONA	LE		
Is the plant community a wetland	? Yes	No _2	<u> </u>					
Rationale for jurisdictional decisio	n:				1.	L		
Vegetative, hydrolog						,		
 This data form can be used for the Assessment Procedure. Classification according to "Soil 	-		ment Pro	ocedure an	nd the Plai	nt Comr	nunity	

	7.	7	46		k /	ОМІ	MUNITY TY		. 1 o	E	
		SOLL	FLAG			TAC	CION DESCR top		N:	rass field	
2/26/9	91 CDL	CD-				ORE	DER NAME:	R.G. Ma	artin		
DEPTH	COLOR	T		TEXTU	RE	T	MOTT	LES			
	,					+				PONDING:	
0-10	5 YR 5/1		gritty	ash			-	-	•	FLOODING: -	
10-17	10 YR 2/2	. 1	gritty	loam.			. · · -	-		MORPHOLOGICA	AL:
17 - 25	10 YR 2/1			11 debi sand	ris &		-	-		OTHER:	
				Sanu						SAT. DEPTH	T
			·				•			WATER DEPTH	<u> </u>
										CLASSIFICATI HYDRIC X NONHYDRIC	
VEGET	NOITAT					<i>a</i>	EPA Cover Cla 1 = 1-5%	ss Meth	odology	4 = 26-50 5 = 51-75 6 = 76-95 7 = 96-10	1
Speci					e	٥	2 = 6-15% 3 = 16-25%			7 = 96-10	08 6
Canop	ρy										
Shrub	o/Saplings	5									
	aceous						Woody Vin	ies			
Note: Late:	s t Rainfal	1	unkno	wn							

unknown

DATA FORM ROUTINE ONSITE DETERMINATION METHOD¹

Field Investigator(s): R.G. Martin	Σ7 A	Date: 3/4/9	91
Project/Site: CD Landfill US Navy (Norfolk)	State: VA	County: City C	of Norfolk
Applicant/Owner: US Navy (Norfolk)	— Plant Community #/Name	South Dit	ch/wet
Note: If a more detailed site description is nece	ssary, use the back of data to	rm or a field note	BOOK.
Do normal environmental conditions exist at the Yes No $\underline{\times}$ _ (If no, explain on back) Has the vegetation, soils, and/or hydrology beer Yes No (If yes, explain on back)			
	VEGETATION		
Indicator	VEGETATION		Indicator
Dominant Plant Species Status	Stratum Dominant Plant Sp	ecies	Status Stratum
1. Phragmites australis FACW			
2 Aster spp —	3 12		
3 <u>Setaria glavca</u> FAC	<u>1</u> 13		
4. Xanthium chinense NI	14		
5. Andropogun glomeratus FACW+	<u>1</u> 15		
6.			
7	17		
8	18		
9			
10	20		
Is the soil: Mottled? Yes x No Matrix Color: 10 YR 6/6 Other hydric soil indicators: Is the hydric soil criterion met? Yes	SOILS SUBGROUP: SUBGROUP: No Undetermined Histic epipedon present? Ye Gleyed? Yes No Mottle Colors: No	x sNox _x	
Rationale: soil at 17-20" possib	ly original A horizo	n, hard to c	letermine
	HYDROLOGY	-	
Is the ground surface inundated? Yes Is the soil saturated? Yes No Depth to free-standing water in pit/soil probe had been surface inundation Sample_taken at edge of puddle	role: 12"	· · · · · · · · · · · · · · · · · · ·	
Is the wetland hydrology criterion met? Yes		tious roots.	Topography
Rationale: several indicators of wetland			
JURISDICTIONA	L DETERMINATION AND R	ATIONALE	
Is the plant community a wetland? Yes x Rationale for jurisdictional decision: plants and hydrology preserved.		and w/out hy	dric features
 This data form can be used for the Hydric Son Assessment Procedure. Classification according to "Soil Taxonomy." 		-	

	* 10° S	7 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	OCA	MMUNITY TYP	Field IPTION:		ه زیسیوسیوسیو ا
3/4/9		BA-6 RE		DER NAME:			•
DEPTH	1 CDL CD- COLOR	-4 BB-6 USDA TEXTURE		MOTTI	FS		
	COLOR	ODDA TEXTORE		1.0111		PONDING:	
0-4	10 YR 3/1	sand and shell		-	-	FLOODING:	
4-16	sandy silt loam	fragments		10 YR 5/8	10 YR 5/3	MORPHOLOGICA	L:
16-17	sandy silt	5Y 5/1		N 4/0	10 YR 6/8	OTHER:	
						SAT. DEPTH	
17-20	silt loam	2.5 Y 2/0		-	-	WATER DEPTH	
20₩	sandy silt loam	5 Y 4/1		-	-	CLASSIFICATI HYDRIC NONHYDRIC	
<u>VEGE</u> Speci	<u> </u>		Cover	EPA Cover Class 1 = 1-5% 2 = 6-15% 3 = 16-25%	ss Methodology	4 = 26-50% 5 = 51-75% 6 = 76-95% 7 = 96-100	ove,
Canor	ρÀ						
Shrub	o/Saplings						
Herba	aceous			Woody Vine	es		
Lates	t Rainfall			•			

DATA FORM ROUTINE ONSITE DETERMINATION METHOD¹

ield Investigator(s): R.G. Man	rtin Fill		- \$7.A	Date:	3/4/91	.11-
roject/Site: CD Land in the control of the control	(Norfol	k) Diam	State: VA	County:	h Ditch-Hplan	od.
ote: If a more detailed site descript	ion is nece	Pesary list	the back of data f	orm or a f	ield notebook.	Iu
o normal environmental conditions es No $\underline{\hspace{0.1cm}}\underline{\hspace{0.1cm}}\underline{\hspace{0.1cm}}\underline{\hspace{0.1cm}}$ (If no, explain as the vegetation, soils, and/or hydes $\underline{\hspace{0.1cm}}\underline{\hspace{0.1cm}}$ No (If yes, explain	on back) rology bee	•	intly disturbed?			
(,,) =			Land			
Dominant Plant Species	Indicator Status		TATION Dominant Plant S	pecies	Indicator Status	Stratun
1. Unidentified Grass			11.			
2. Aster SPP	?	2	12.			
3. Setaria Glauca						
4. AndropogunGlomeratus			14			
5. Andropogun Virginicus					· · ·	
6						
8		<u> </u>	18			
0			19			
10			20	· · · · · · · · · · · · · · · · · · ·	<u> </u>	
Is the soil on the hydric soils list? Is the soil a Histosol? Yes Is the soil: Mottled? Yes Matrix Color: 10 YR6/4 Other hydric soil indicators: No Is the hydric soil criterion met? Y Rationale: No hydric indi	No x No x 10YR573 one	Histic ep Gleyed? Mottle		es	No x	
		HYDI	ROLOGY			
Is the ground surface inundated? Is the soil saturated? Yes Depth to free-standing water in pit/ List other field evidence of surface	No \underline{x} soil probe	hole: No		depth: _	N/A	
Is the wetland hydrology criterion r Rationale: No hydro	net? Yes	ndicato	No x			· · · · · · · · · · · · · · · · · · ·
JURI	SDICTION	AL DETE	RMINATION AND	RATIONA	LE	
Is the plant community a wetland?	Yes	No	X			
Rationale for jurisdictional decision	. —			cont		
Plants and soils undet	. ,					
 This data form can be used for the Assessment Procedure. Classification according to "Soil 1" 	•		sment Procedure a	nd the Pla	nt Community	

	# / R / R / R / R / R / R / R / R / R /	1/2	** / C	* / * /	CO	MMUNITY TYP		47.4		
		SOLL	FLAG	PHO270		TION DESCRI		N:		
3/4/9	1 CDL	CD-5	BB-8	_ RI	COF	DER NAME:	R.G.	Martin		
DEPTH	COLOR		USDA	TEXTURE		MOTTI	LES			
0-10	10 YR 6/4		Sand an	d shell					PONDING: Non	
		, j		fragments					FLOODING Non	
10-19	10 YR 2/0			ar coa-li erial	te	<u></u>			MORPHOLOGIC	AL:
19-30	10 YR 5/3		Sandy	silt loam		10 YR 4/6	-		OTHER:	
30-33	10 YR 5/2	. 1	_	silt loam		10 YR 4/6	_		SAT. DEPTH	T-
	10 IR 5/2		Sandy	SIIC IOam					WATER DEPTH	T -
									CLASSIFICAT HYDRIC NONHYDRI	
VEGET	NOITAT		·		1	EPA Cover Clas	ss Meth	odology	4 ~ 26-50 5 = 51-75	1
Speci	.es				Cover	2 = 6-15% 3 = 16-25%			4 ~ 26-50 5 = 51-75 6 = 76-95 7 = 96-10	0
Canop	λ					1				
						·				
									•	
Shrub	/Saplings				T					\top
	•									1
Herba	aceous					Woody Vine	es		•	T
Notes										

APPENDIX E

Groundwater Monitor Well Liquid Level Data
(Will be included in the Final Report)

APPENDIX F Laboratory Analysis Quality Assurance/Quality Control (QA/QC) Data

TRACE METAL DATA PACKAGE
(LEVEL C)
FOR
NAVY - CD LANDFILL

TABLE OF CONTENTS

			rage
1.	Cover Page and Case Narrative		2
2.	Data Summary (Form 1)		5
3.	QC Summary (Form 2-6,8)		18
4.	Control Charts	·	28

1. COVER PAGE AND CASE NARRATIVE

COVER PAGE - INORGANIC ANALYSES DATA PACKAGE

Lab Name: E.S.E.		Contract: NVY-	CDLF
Lab Code:	Case No.:	SAS No.:	SDG.No.: G21088
SOW No. 7/88			
	EPA Sample No. EQPBLK EQPBLK	Lab Sample ID NACDLW2*10 NACDLW2*11	
	FD# FD#D FD#S	NACDLW2*8 RP*NACDLW2*8 SPM1*NACDLW2*8	
	FD#S FLDBLK MW1	SPM2*NACDLW2*8 NACDLW2*9 NACDLW2*1	
	MW2 MW3 MW4	NACDLW2*2 NACDLW2*3 NACDLW2*4	
	MW5 MW6 SW2	NACDLW2*5 NACDLW2*6 NACDLW2*14	
	<u>SW3</u>	NACDLW2*15	
Were ICP interel	ement corrections applie	d?	Yes/No Y
	und corrections applied? e raw data generated bef		Yes/No Y
	of background correction		Yes/No N
Comments:			
conditions of the other than the coin this hardcopy	his data package is in c e contract, both technic onditions detailed above data package has been a	ally and for comp Release of the uthorized by the	leteness, for data contained
or the Manager's Signature:	designee, as verified b	y the following s	ignature.
Date:	Ly 18, 1991 Ti	tle: MANAGE12 - I	VORGANIC CHEM. DIVISION
ا با الله الله الله الله الله الله الله	COVER PA	GE - IN	

CASE NARRATIVE

GENERAL

A total of 12 samples are reported under this sample delivery group (SDG) number G21088. Samples SW2, SW3 and the equipment blank were collected 6/10/91 and the remaining samples were collected 6/12/91. All samples were received in good condition. The fraction for total metals was appropriately preserved. All analyses were performed within required holding times.

ANALYSIS SUMMARY

Total Sodium, Cadmium, Iron and Lead were analyzed by ICP. Analytical methods as stated in EPA-CLP Statement of Work (SOW) for Inorganic Analyses No. 7/88 were employed to generate the enclosed Level C data package. A matrix spike duplicate (MSD) sample analysis, a non-CLP requirement, was also performed as requested by the Client.

QUALITY CONTROL ANALYSIS SUMMARY

All QC analyses were within acceptable control limits.

2. DATA SUMMARY (Form 1)

	· ·	INORGANIC A	1 ANALYSIS DATA S	SHE	ET	:	EPA SAMPLE NO
Lab Name: E.S.	E.		Contract: 1	1VY	-CDLF	1	MW1
Lab Code:	Ca	ase No.:	SAS No.	. :			SDG No.: G210
: ,Matrix (soil/w	ater): WATE	R		L	ab Sa		ID: NACDLW2*
Level (low/med							ved: 06/13/91
		•			ace n	ece1	ved: 00/13/31
% Solids:	0.0						
Con	centration	Units (ug/	L or mg/kg dry	we	ight)	: UG	/L
	1010 11	1	1			<u> </u>	1
V	CAS No.	: Analyte !	Concentration	1 C I I I	Q	l M !	!
i	17429-90-5	Aluminum	[i-i		~i	i
1	17440-36-0			_		_	1
	17440-38-2			1_1		_	1
i de la companya de l	17440-39-3		1	<u> </u>		_	1
	17440-41-7			1_1			1
:	17440-43-9		3.00	U		_ <u> P</u> _	
;	17440-70-2						
	17440-47-3	***************************************	<u> </u>	!_!		_!	
,	17440-48-4		<u> </u>	!_!		_!	
<i>i</i>	17440-50-8		1-46000	!_!		_!	1
	17439-89-6		46200.00	!-!		_! <u>P</u> _	
Y		Lead	45.10	!-!		_ <u>¦₽</u> _	1
		Magnesium		!-!		<u></u> !	
*	17439-96-5		1	<u>:</u> -:		_!	. .
5		Mercury	1	!!	···	!	
1		Nickel	i	!!		<u> </u>	. ('1
	17440-09-7 17782-49-2	Selenium		<u> -</u>		¦	i '1
		Silver	!	<u> -</u>		¦	1 1
•	17440-23-5		23700.00	<u></u> ;;		$-\frac{1}{P}$	1
	17440-28-0		23700.00	<u></u> ''	***************************************	─¦ Ĕ	. 1 . !
	17440-62-2			;-;		-¦	!
1	17440-66-6			;-;	-	;	. }
	1	Cyanide		i^{-1}		i	•
			1	$i^{-}i$		i	i
s - 1							• [
Color Before:		Clari	ty Before:			Te	xture:
Color After:		Clari	ty After:			Ar	tifacts:
Comments:							
· · · · · · · · · · · · · · · · · · ·							

<u> </u>			· · · · · · · · · · · · · · · · · · ·				
	- <u> </u>						

		INORGANIC A	1 ANALYSIS DATA S	SHEET	EPA SAMPLE NO.
					MW2
Lab Name: E.S.	.E.		Contract: 1	NVY-CDLF	I
Lab Code:	C	ase No.:	SAS No	• :	SDG No.: G2108
Matrix (soil/v	water): WATE	R		Lab Sam	ple ID: NACDLW2*2
Level (low/med	d):			Date Red	ceived: 06/13/91
% Solids:	0.	0			
Cor	ncentration	Units (ug/	L or mg/kg dry	weight):	UG/L
		1	1		
	CAS No.	: Analyte	Concentration	ICI Q	M
	17429-90-5	Aluminum		i-i-	<u> </u>
	17440-36-0	·		i	i
	17440-38-2			1	
	17440-39-3				1-1
	17440-41-7		-		
ž.	17440-43-9			1 U I	I P I
	17440-70-2	Calcium		1 1	1 1
	17440-47-3	Chromium	1	1 1	
	17440-48-4	Cobalt		1 1	
e de la companya de l	17440-50-8	Copper	1	1_1	1_1
	17439-89-6	Iron	l 47500.00	1_1_	IP I
	17439-92-1	Lead	160.70	1_1	IP I
		Magnesium		1_1	11
	17439-96-5			1_1	<u> </u>
				1_1	.11
	17440-02-0	Nickel		1_1	11
	7440-09-7	Potassium		_ _	.
	17782-49-2	Selenium	<u> </u>	<u> </u>	
		Silver		<u> </u>	.
1	17440-23-5		42300.00	!_!	<u> P </u>
	17440-28-0	Thallium	<u> </u>	<u> </u>	
	17440-62-2		<u> </u>	!-!	
	7440-66-6	•	i	<u> </u>	·
		Cyanide 		<u> </u>	\ <u>-</u>
				· · · · · · · · · · · · · · · · · · ·	· ' '
Color Before:		Clari	ty Before:		Texture:
Color After:		Clari	ty After:		Artifacts:
Comments:					
	-			······································	
				· · · · · · · · · · · · · · · · · · ·	
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)		INORGANIC A	1 ANALYSIS DATA S	SHEE	T	·	EPA	SAMP:	LE NO.
						\		MW3	
Lab Name: E.S.	E.		Contract: N	1AA-	CDLF	1_			
Lab Code:	Ca	ase No.:	SAS No.	. :			SDG	No.:	G2108
Matrix (soil/w	vater): WATE	R		La	b Sa	mple	ID:	NAC	DLW2*3
Level (low/med	1):			Da	te R	ecei	ved:	06/	13/91
% Solids:	0.	0							
Con	centration	Units (ug/1	or mg/kg dry	wei	ght)	: UG	/L		
	CAS No.	! ! Analyte	Concentration	I I	Q	I M	! !		
	7429-90-5 7440-36-0			<u> </u> _ _		_ _			
	17440-38-2 17440-39-3	Arsenic		<u> </u> - -		-¦	! 		
	17440-33-3 17440-41-7 17440-43-9	Beryllium	3.00	'-'- !!-		-¦ -¦ P	1 		
	17440-70-2	Calcium	3.00	<u>-</u> -		-¦ <u>-</u> -	: 		••
· · · · · · · · · · · · · · · · · · ·	17440-48-4 17440-50-8	Cobalt		i-i-			! !		
	17439-89-6 17439-92-1	Iron	4070.00	_ _ !_		$-\frac{P}{P}$!		
	17439-95-4 17439-96-5	Magnesium		<u> </u>		_	1		
	17439-97-6			i=i-			1		
	17440-09-7	Potassium		i-i-		_	1		
		Silver	10000.00			_; _;			
	17440-28-0 17440-62-2			- -		_	 		
	1 <u>7440-66-6</u>	Zinc Cyanide				_ _	1		
2			I	'_'-		1			
Color Before:			ty Before:			Te	xtuı	re:	
Color After:		Clari	ty After:			Ar	tifa	acts:	
Comments:									

		INORGANIC A	1 ANALYSIS DATA S	SHEE	T		EPA	SAMPLE	NO.
Tab Name T			Control who	TT 732	CDI	1		MW4	
Lab Name: E	1.D.E.	X 21 - 22 - 23 - 24 - 24 - 24 - 24 - 24 - 24	Contract: 1	NVI-	-CDFE	!.			-
Lab Code:	C	ase No.:	SAS No	. :			SDG	No.: G	2108
Matrix (soi	il/water): WATE	R		La	ıb Sa	mple	ID:	NACDL	W2 * 4
Level (low,	/med):			Da	ate R	ecei	ved:	06/13	/91
% Solids:	0.	0							
	Concentration	Units (ug/	L or mg/kg dry	wei	lght)	: UG	/L	V.	
	CAS No.	 Analyte	 Concentration	I I	Q	I M	1		
	1	1		!_!-		_!	.!		
	17429-90-5			!-!-			. [
	17440-36-0		i	¦¦-	· · · · · · · · · · · · · · · · · · ·	_	i		
	17440-38-2	•	i	<u> </u>		¦			
	1 <u>7440-39-3</u> 17440-41-7		1	¦¦-		¦	· i		
	17440-41-7			֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֡֓֓֓֓֡		-¦-	-		
	17440-70-2			¦~¦-		╌╎╧╌	4		-
	7440-47-3			;-;-		-:			
	17440-48-4			;-;:-		-;-	· i		
		Copper		i-i-		- i	· j		
		Iron	1 139000.00	;-;-		I P			
	17439-92-1	Lead	1 113.00	- -		- IP	ì		
	17439-95-4			- -		_,_	1		
	17439-96-5			1-1-		_ ₁	Î		
1		Mercury		1 - 1		- ; -	1		
		Nickel	1	171		_	1		
	17440-09-7	Potassium	-	1_1		1	ĺ		
		Selenium		$I \square I$		1	1		
	17440-22-4			1_1		l	_ l		
	17440-23-5	Sodium	128000.00	!_!_		<u>P</u> _	_1		
	17440-28-0	Thallium		1_1		\-	_{ } .		
		Vanadium	1	1_1			_		
	17440-66-6	Zinc		1_1.			_ !		
		Cyanide	<u> </u>	!_!-		!	_!		
	i	_ i	<u> </u>	<u> _ _</u>		'	_ 1		
Color Befo	re:	Clari	ty Before:			T∈	extur	:e:	
Color Afte	r:	Clari	ty After:			Ar	tifa	acts:	
Comments:									
		· · · · · · · · · · · · · · · · · · ·			·				
		· · · · · · · · · · · · · · · · · · ·							·

		INORGANIC F	ANALYSIS DATA S	SHEET	
Lab Name: E.S.	E.		Contract: 1	1VY-CDLF	 MW5
Lab Code:		ase No.:	SAS No	•	SDG No.: G2108
			5110 110	• • .	555 NO.: 92100
Matrix (soil/w	vater): WATE	R		Lab Sam	ple ID: NACDLW2*5
Level (low/med	1):			Date Red	ceived: 06/13/91
Solids:	0.	0			
Con	centration	Units (ug/I	or mg/kg dry	weight):	UG/L
	1	1		<u> </u>	
	ICAS No.	! Analyte	Concentration	ICI Q	IM
	17429-90-5	1 7 1 1 2 2 2 2 2 2 2		[_[_	!—!
			i	<u> </u>	<u>ii</u>
	17440-36-0 17440-38-2		1	<u> -</u>	1
	17440-38-2		f	<u> </u>	
	17440-33-3		!	<u> </u>	<u>'</u>
	7440-43-9			<u> </u>	'P'
	7440-70-2		!!	¦=}	<u>' </u>
	17440-47-3		'	<u>'</u> -'	<u> </u>
¥	7440-48-4		!	<u> -</u>	<u>'</u>
	17440-50-8		<u> </u>	¦	<u> </u>
	17439-89-6		98600.00	<u>'</u>	I P
	17439-92-1	Lead	52.80	<u> </u> -	I P
	7439-95-4			<u> </u>	<u>i — i</u>
	17439-96-5			<u>i – i – – – – </u>	<u>'</u> '
	17439-97-6		·	<u>i </u>	i—i
	17440-02-0		·	<u>i – i – – – – </u>	<u>i — i</u>
•	17440-09-7		1	i - i	` i 'i
	17782-49-2]	i-i	<u>i—i</u>
	17440-22-4	Silver		<u> </u>	` <u> </u>
	17440-23-5		29100.00	i – i – – – – – – – – – – – – – – – – –	iPi
	17440-28-0			1 1	i - i
	17440-62-2		1		<u>i — i</u>
	17440-66-6		}	1-1	i i i
	1	Cyanide	1		
	1	1	1	1-1	
Color Before:	•	Clari	ty Before:		Texture:
Color After:		Clari	ty After:		Artifacts:
Comments:					

Lab Name: E.S.E. Contract: NVY-CDLF Lab Code: Case No.: SAS No.: SDG Matrix (soil/water): WATER Lab Sample ID: Level (low/med): Date Received: % Solids: Concentration Units (ug/L or mg/kg dry weight): UG/L	MW6
Lab Code: Case No.: SAS No.: SDG Matrix (soil/water): WATER Lab Sample ID: Level (low/med): Date Received: % Solids: 0.0	
Matrix (soil/water): WATER Level (low/med): Solids: 0.0	
Level (low/med): % Solids: 0.0	No.: G2108
% Solids: 0.0	: NACDLW2*6
	: 06/13/91
Concentration Units (ug/L or mg/kg dry weight): UG/L	
,	
CAS No. Analyte Concentration C Q M	
17440-36-0 Antimony	
7440-38-2 Arsenic	
7440-39-3 Barium	
7440-41-7 Beryllium	
7440-43-9 Cadmium 3.00 U P	
7440-70-2 Calcium _ _ _	•
7440-47-3 Chromium _ _ _	
7440-48-4 Cobalt	
7440-50-8 Copper	
7439-89-6 Iron	
7439-92-1 Lead 128.00 P	
7439-95-4 Magnesium	
17439-96-5 Manganese	
7439-97-6 Mercury	
17782-49-2 Selenium	
17440-22-4 Silver	
17440-23-5 Sodium 22200.00 P	
7440-28-0 Thallium	
7440-62-2 Vanadium	
7440-66-6 Zinc	
Cyanide	
Color Before: Clarity Before: Textu	re:
Color After: Clarity After: Artif	acts:
Comments:	
a	

		INORGANIC A	1 ANALYSIS DATA :	SHEET	EPA SAMPLE NO.
Lab Name:	н с н		Contract: 1	NVV-CDI.F	 FD#
dab Rame.	D.D.D.		concract.	WAT COUR	
Lab Code:	(Case No.:	SAS No	.:	SDG No.: G21088
Matrix (so	il/water): WAT	ER		Lab San	nple ID: NACDLW2*8
Level (low	/med):			Date Re	eceived: 06/13/91
% Solids:	0	. 0			
	Concentration	Units (ug/	L or mg/kg dry	weight):	UG/L
, · · · · · · · · · · · · · · · · · · ·	[1	<u> </u>	<u> </u>
	CAS No.	Analyte	 Concentration	C Q	IM I
	7429-90-5	Aluminum		<u> </u>	-
		Antimony	!	1 1	- ₁ ₁
	17440-38-2	Arsenic	1	1_1	[<u> </u>
	1 <u>7440-39-3</u>		1	1_1	[1]
1		Beryllium		1_1	<u>_l</u> l
	17440-43-9		3.00	<u> U </u>	_ <u>P_ </u>
	17440-70-2		<u> </u>	!-!	
ť	17440-47-3]	!-!	!
	17440-48-4		<u> </u>	!-!	
	17440-50-8		57000 00	!-!	-!!
	17439-89-6		57800.00	¦-¦	$-\frac{P}{2}$
1	17439-92-1	_ <u>Lead</u> Magnesium	39.00	¦-¦	_ <u>P_</u>
		Manganese		¦¦	-
	7439-97-6			¦¦	
en e	7440-02-0		1	`}- <u></u> }	-
		Potassium		· [—] ———	-{{
	17782-49-2			i - i	-;;
	17440-22-4			i-i	-ii
r.	17440-23-5	Sodium	24600.00		IP I
•	17440-28-0	Thallium		1 1	- ₁ ₁
	17440-62-2	Vanadium	1		
	17440-66-6			[[]	
	!	Cyanide			<u> </u>
	l	_	1	. _	_
Color Befo	ore:	Clari	ty Before:		Texture:
			- -		
Color Afte	er:	Clari	ty After:	•	Artifacts:
Comments:					
a				<u></u>	
					
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3					

		NORGANIC A	1 ANALYSIS DATA S	SHEE'	r	E	EPA SAME	PLE NO.
Lab Name: E.S.	E.		Contract: 1	4VY-(CDLF		FLDE	BLK
Lab Code:	Ca	ase No.:	SAS No.	.:		5	SDG No.:	G21088
Matrix (soil/w	ater): WATE	र		La!	b Sam	ple	ID: NAC	CDLW2*9
Level (low/med):			Da	te Re	ceiv	/ed: 06/	13/91
% Solids:	0.0)						
Con	centration (Jnits (ug/	L or mg/kg dry	wei	ght):	UG,	/L	
	ICAS No.	l ! Analyte	 Concentration	 (Q	I I M	<u> </u> -	
j	1	<u> </u>		_ _ _			! 	
	17429-90-5 17440-36-0			<u> </u>		-		
	17440-38-0		! !	<u> </u>		-¦	i !	
	17440-39-3		'	i-i-	······	-i	! 	
	17440-41-7		1			1	•	
	17440-43-9		1 3.00	ַוַעַו		! P	, `	
→	17440-70-2			_ _		_		
	17440-47-3		!	!_!_		-!	!	
	17440-48-4		!	!_!_		-!		
	17440-50-8		12.50	<u> </u>		-		
	17439-89-6		13.50		·	- <u>P</u>	; :	
	1 <u>7439-92-1</u> 1 <u>7439-95-4</u>		34.50			-¦ <u>P</u> _	i t	
	17439-96-5			<u> </u> - -		-¦	! !	
	17439-97-6			<u> </u> - -		-¦	! !	
")	17440-02-0		1	i-i-	· · · · · · · · · · · · · · · · · · ·	-i		
٠	17440-09-7		!	- -		i —		
	17782-49-2		1	1 <u></u> 1				
¬	17440-22-4		1	<u> </u>			!	
	17440-23-5		264.00	<u> B </u> _		<u> P</u>	1	
	17440-28-0		1	!_!_		_!	!	
	1 <u>7440-62-2</u> 1 <u>7440-66-6</u>		i	<u> </u>		-¦	į	
	17440-00-0	Cyanide		- -		-¦	i L	
		l		<u> -</u> -		-¦	!	
rin .			· · · · · · · · · · · · · · · · · · ·	·—·—		-'	•	
Color Before:		Clari	ty Before:			Te	xture:	
Color After:		Clari	ty After:			Ar	tifacts	•
-Comments:								
1								<u> </u>
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	INORGANIC A	1 ANALYSIS DATA S	SHEET	EPA SAMPLE NO.
Lab Name: E.S.E.		Contract: 1	NVY-CDLF	EQPBLK
Lab Code:	Case No.:	SAS No	• :	SDG No.: G21088
Matrix (soil/water): WAT	ER		Lab Sampl	le ID: NACDLW2*10
Level (low/med):			Date Rece	eived: 06/11/91
% Solids: 0	0.0			
Concentration	Units (ug/	L or mg/kg dry	weight): [JG/L
CAS No.	Analyto	 Concentration		
	<u> </u>		C Q N _	
	Aluminum	!	!-!!-	
	Antimony Arsenic	i !	{- }-	-
17440-38-2		!	<u> -</u>	 ¦
	Beryllium		<u> </u>	- ;
17440-43-9		3.00	IUI II	5
17440-70-2				
17440-47-3	Chromium	1	1_1	<u> </u>
17440-48-4		1	1_11	<u> </u>
17440-50-8			_ _	
17439-89-6				<u> </u>
17439-92-1			<u> U 1</u>	<u>-</u> !
	Magnesium Manganese		<u> </u>	 ;
	Mercury		<u>'-'</u> '-	
17440-02-0			<u> - </u> -	
	Potassium		i-i	
	Selenium	1	i-ii-	— <u>i</u>
17440-22-4	Silver	1		<u> </u>
17440-23-5	Sodium	483.00	B	P
) Thallium		1_11	<u> </u>
	Vanadium			!
7440-66-6		<u> </u>	<u> </u>	
·	Cyanide	i	¦-¦	
' <u></u>		·	'-'	I
Color Before:	Clari	ty Before:	,	Texture:
Color After:	Clari	ty After:		Artifacts:
Comments:				
		· · · · · · · · · · · · · · · · · · ·		

		INORGANIC	ANALYSIS DATA	SHEET		EPA SAMPLE NO
ab Name: E.S.	E.		Contract:	NVY-CË	 	EQPBLK
ab Code:	Ci	ase No.:	SAS No	• • •		SDG No.: G210
atrix (soil/w	rater): WATE	R		Lab	Sample	ID: NACDLW2*
evel (low/med	1):			Date	Recei	ved: 06/13/91
Solids:	0.	0				
Con	centration	Units (ug/	L or mg/kg dry	weiah	nt): UG	/L
		,	· · · · · · · · · · · · · · · · · · ·	1 1		<u>. </u>
	CAS No.	 Analyte	 Concentration	ici ç	M .	1
	1	1		.	I	.1
	17429-90-5			.!_!	!_	
	17440-36-0			.¦-}	<u> </u>	i 1
	17440-38-2 17440-39-3		· .	.''		i '1
	17440-39-3		. !	-		i
	17440-43-9		3.00	·¦ऩ¦	¦-	1
	7440-70-2		1 3.00	-¦≌¦	¦	
	17440-47-3			·i-i	<u>'</u>	.'
	17440-48-4		1	· -		
	17440-50-8			i-i-	i	1
	17439-89-6		8.40	IBI	P	i e
	17439-92-1		34.50		P	1
	17439-95-4	Magnesium		- -		1
	17439-96-5	Manganese	1	1 1]	
	17439-97-6					1
	1 <u>7440-02-0</u>		l			1
	17440-09-7	· ————————————————————————————————————	ı !			
	17782-49-2		<u> </u>	1_1	I	
	17440-22-4		<u> </u>	-1-1	l	1
	17440-23-5	Sodium	494.00	<u> B </u>	<u>P</u> _	-
	17440-28-0	Thallium		-!-!	!	_
	17440-62-2	Vanadium	<u> </u>	-!-!	<u>!</u>	
	7440-66-6	Zinc	-	-	;	- <u>.</u>
		Cyanide	_ 1	-	i	
alam Dafama		01	D 5	- 1 1		•
olor Before:		Clari	ty Before:		Т€	exture:
olor After:		Clari	ty After:		Ar	tifacts:
omments:						
			· · · · · · · · · · · · · · · · · · ·			

		INORGANIC A	ANALYSIS DATA	SHEET	EFA	SAMPLE NO
					1	SW2
ab Name: E.S	.E.		Contract:	· • • • • • • • • • • • • • • • • • • •		
ab Code:	C	ase No.:	SAS No	•:	SDG	No.: G210
atrix (soil/	water): WATE	R		Lab Sa	mple ID	: NACDLW2*
evel (low/me	d):		ž.	Date F	leceived	: 06/11/91
Solids:	0.	0				
Co	ncentration	Units (ug/	L or mg/kg dry	weight)	: UG/L	
	 	1 2 - 2 - + -	 	1 1 0		
	ICAS No.	: Analyte	Concentration	ICI Q	M	
	7429-90-5	Aluminum		-;-;	-ii	
	17440-36-0		1	1 1		
	17440-38-2		1	- -	_,,	
	17440-39-3	·		1 1		
	17440-41-7		1	- 		
	17440-43-9		3.00	101	P	
	17440-70-2	Calcium		[1 1	
	17440-47-3	Chromium			!!	
	17440-48-4			1_1	!!	
	17440-50-8	Copper	1	.	!!	
	17439-89-6	lIron	1 2650.00	<u> </u>	! <u>P_</u> !	
	17439-92-1	Lead	34.50	_! <u>U</u> !	! <u>P_</u> !	
	17439-95-4			_!!		
	1 <u>7439-96-5</u>		1	_	11	
	17439-97-6	Mercury		_	_!!	
	17440-02-0			_	_!!	
	17440-09-7		!	-!-!	!!	
	17782-49-2		<u> </u>	- -	_!!	
	17440-22-4		1 45000 00	-	-!!	
	17440-23-5		15300.00	-	<u> P_</u>	
	17440-28-0	Thallium	i	-¦¦	!!	
	1 <u>7440-62-2</u> 17440-66-6	Vanadium	. i	-	!!	
	17440-00-0	<u>Zinc</u> Cyanide		-		
		Cyanitue			_;_;	
olor Before:		Clari	ty Before:		Textu	ire:
olor After:		Clari	ty After:		Artif	acts:
comments:						
				· · · · · · · · · · · · · · · · · · ·		
· · · · · · · · · · · · · · · · · · ·						
·						

Matrix (soil/water): WATER Level (low/med): Concentration Units (ug/L or mg/kg dry weight): UG/L CAS No. Analyte Concentration C Q M 7429-90-5 Aluminum 7440-36-0 Antimony 7440-39-3 Barium 7440-41-7 Beryllium 7440-43-9 Cadmium 7440-470-2 Calcium 7440-48-4 Cobalt 7440-50-6 Iron 7439-95-1 7439-95-1 7439-95-6 7439-97-6 7440-22-0 7440-23-0 7440-23-0 7440-23-1 7440-23-2 7440-23-3 7440-23-5 7440-23-0 7440-23-0 7440-23-0 7440-23-1 7440-23-1 7440-23-0 7440-23-0 7440-23-0 7440-23-0 7440-23-0 7440-23-0			INORGANIC A	1 ANALYSIS DATA :	SHEET	[EPA SAMPLE NO		
Lab Code: Case No.: SAS No.: SDG No.: G21088 Matrix (soil/water): WATER Lab Sample ID: NACDLW2*19 Level (low/med): Date Received: 06/11/91 Solids: 0.0 Concentration Units (ug/L or mg/kg dry weight): UG/L CAS No.							l SW3		
Matrix (soil/water): WATER Level (low/med): Concentration Units (ug/L or mg/kg dry weight): UG/L CAS No. Analyte Concentration C Q M 7429-90-5 Aluminum 7440-36-0 Antimony 7440-39-3 Barium 7440-41-7 Beryllium 7440-43-9 Cadmium 7440-470-2 Calcium 7440-48-4 Cobalt 7440-50-6 Iron 7439-95-1 7439-95-1 7439-95-6 7439-97-6 7440-22-0 7440-23-0 7440-23-0 7440-23-1 7440-23-2 7440-23-3 7440-23-5 7440-23-0 7440-23-0 7440-23-0 7440-23-1 7440-23-1 7440-23-0 7440-23-0 7440-23-0 7440-23-0 7440-23-0 7440-23-0	Lab Name: E.S.	Ε.		Contract: 1	YVV-(CDLF].		
Date Received: 06/11/91 % Solids: Cas No. Analyte Concentration C Q M 7429-90-5 Aluminum	Lab Code:	C	ase No.:	SAS No		SDG No.: G210			
Concentration Units (ug/L or mg/kg dry weight): UG/L CAS No.	Matrix (soil/w	ater): WATE	R		Lak	Sample	ID: NACDLW2*		
Concentration Units (ug/L or mg/kg dry weight): UG/L CAS No.	Level (low/med):			Dat	e Recei	ived: 06/11/91		
CAS No. Analyte Concentration C Q M	% Solids:	0.	0						
7429-90-5 Aluminum	Con	centration	Units (ug/	C or mg/kg dry	weig	ght): UC	3/L		
7440-36-0 Antimony		ICAS No.	 Analyte	 Concentration	I I	Q M	- !		
7440-38-2 Arsenic					<u>-</u> -	<u> </u>	_		
7440-39-3 Barium		7440-36-0	Antimony		!=!=	<u> </u>	_1		
7440-41-7 Beryllium					<u> </u>	<u> </u>			
7440-43-9 Cadmium 3.00 U P					<u> - -</u>				
7440-47-3 Chromium					ĪŪĪ	P	- <u>i</u>		
7440-48-4 Cobalt					<u> </u>		_1		
7440-50-8 Copper		***************************************			<u> </u>		<u>_</u> 1		
7439-89-6 Iron 38100.00 P					!_!_		_1		
7439-92-1 Lead 34.50 U P				00100	!_!_		_!		
7439-95-4 Magnesium					!=!-				
7439-96-5 Manganese				34.50	¦⊔¦—	<u> P</u>	-		
7439-97-6 Mercury					¦-¦-	¦	- <mark>i</mark>		
7440-02-0 Nickel	1. r				¦-¦-				
7440-09-7 Potassium					i-i-	<u> </u> -			
7782-49-2 Selenium					i-i-		- <u>i</u>		
					1-1-		-		
7440-28-0 Thallium					1_1_		-1		
7440-62-2 Vanadium				24000.00	1_1_	I P	_ _{		
7440-66-6 Zinc					 _ _	l	_!		
Color Before: Clarity Before: Texture: Color After: Clarity After: Artifacts:					!_!_		_!		
Color Before: Clarity Before: Texture: Color After: Clarity After: Artifacts:		1/440-66-6			!-!-		_!		
Color After: Clarity After: Artifacts:		1	Cyanide	 	¦-¦-		- ¦		
Color After: Clarity After: Artifacts:		1		· · · · · · · · · · · · · · · · · · ·	'-'-	i	_ ⁱ		
micriacis.	Color Before:		Clari	ty Before:		Te	exture:		
Comments:	Color After:		Clari	ty After:		A	ctifacts:		
	Comments:								

3. QC SUMMARY (FORM 2-6,8)

2A INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: E.S.E.

Contract: NVY-CDLF

Lab Code:

Case No.:

SAS No.:

SDG.No.: G21088

Initial Calibration Source:

Continuing Calibration Source:

Concentration Units: UG/L

	· · · · · · · · · · · · · · · · · · ·			 			·		
 	Initia	l Calibra			Continui		i	1	
Analyte	True	Found	%R(1);	True	Found	%R(1)	Found	%R(1)¦	l M
Aluminum	i					1			¦
Antimony	t				l	1	:		1
Arsenic				l		1			!
Barium	!				l	_			1
<u>Beryllium</u>				l	.	_ I		ll	
Cadmium	1000.0	1008.18	1 <u>100.8</u>	l	·	_1	<u> </u>		l <u>P</u>
<u>Calcium</u>			l	l	.	1		ll	
Chromium	1			l	. I	_ l		!!	
Cobalt	!				<u> </u>	_1			
<u>Copper</u>				l		_ !	l	_!!	I
Iron	1000.0				.	_1	l	_11	1P
<u>Lead</u>	1000.0	1007.66	1 <u>100.8</u>	<u> </u>		_ !		_	<u> P</u>
Magnesium	!		l	l	_	_ !	l	_	
<u>Manganese</u> !			l	l	.	- I <u> </u>	l	_	
Mercury	<u> </u>		l	<u> </u>	-		ł		· I
Nickel			!	<u> </u>	_ [_	!	. ! !	
Potassium	!		!	! 	- <u> </u>	-!		_	
Selenium	!	·	<u> </u>		_	_ !	l		
Silver		1	!		_	_	ļ	<u> </u>	I I
Sodium					_1	_ I	1	<u> </u>	I I P
Thallium			<u> </u>	<u> </u>	_	_	t	_	
<u>Vanadium</u>			!	!	_ [<u> </u>	l		
Zinc			<u> </u>	!	_ !	1	!		
<u>Cyanide</u>	<u> </u>]	}	. }	_1	i	_	
1 1			1	1		1	!	!	!!

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

FORM II (PART 1) - IN

2A INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: E.S.E.

Contract: NVY-CDLF

Lab Code:

Case No.:

SAS No.:

SDG.No.: G21088

Initial Calibration Source:

Continuing Calibration Source:

Concentration Units: UG/L

· · · · · · · · · · · · · · · · · · ·			· · · · · · · · · · · · · · · · · · ·					i	,
	Initia	l Calibra	ation		Continuir	ng Cali	bration	i !	⊹i I
Analyte	True	Found	%R(1)!	True	Found	%R(1)	Found	%R(1)	M
Aluminum	<u> </u>						·····	ii 	¦—
Antimony !]			1		·			
Arsenic]			!	· · · · · · · · · · · · · · · · · · ·				i
Barium	1			1					1
Beryllium!								· 	i —
Cadmium				500.01	492.85	98.61	509.28	101.9	I P
Calcium	;		1						<u> </u>
Chromium !			!						i^-
Cobalt !	1			<u> </u>			· · · · · · · · · · · · · · · · · · ·	·	i —
Copper	1		1 1	1					i —
Iron			1 1	5000.01	4969.90	99.4	5093.98	101.91	P
Lead			1	500.0					
Magnesium!				1				i	1
Manganesel	1				.			i —— i	i —
Mercury !				1	.				i
Nickel !	1								j-
Potassium!							·		1
Selenium !				1					
Silver !	 !								i^-
Sodium	1000.01	1028.15	102.8	5000.01	5112.55	102.3	5283.38	105.7	i P
Thallium !				1				i	<u> </u>
Vanadium !			l					<u>'</u>	i —
Zinc			l	1				i i	·
Cyanide !				. 1		·		; '	<u> </u>
	<u> </u>		1	1		·		; —— ;	<u>;</u> —

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

FORM II (PART 1) - IN

2A INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: E.S.E.

Contract: NVY-CDLF

Lab Code:

Case No.:

SAS No.:

SDG.No.: G21088

m Initial Calibration Source:

Continuing Calibration Source:

Concentration Units: UG/L

1			!					: !	
	Tnitia	l Calibra	ation :		Continuir	na Cali	bration		!
Analyte	True	Found	%R(1)¦		Found	%R(1)		%R(1)!	M
1			}				204	!	1
Aluminum			ı —— Ì		· · · · · · · · · · · · · · · · · · ·			·i	i
Antimony			1 7 1						_
Arsenic			1 1			i i			<u>i</u>
Barium				1		ļ —			1
Beryllium			!	<u> </u>					1
Cadmium				500.0	510.56	102.1	499.20	99.81	1P
Calcium			1						1
Chromium	l		11			1			1
Cobalt			ا ا	;		!			1
Copper			{}			¦			1
Iron			1	5000.0	5172.93	103.5	5096.33	101.91	P
Lead			اا	500.0	510.32	102.1	492.33	98.51	I P
Magnesium			ا <u></u> ا	I					
Manganese									
Mercury	I		!!			1 1			
Nickel	I		11						1
Potassium	ll		۱ <u> </u>	}		11			}
<u>Selenium</u>	l l		! <u></u> !	I		ll		i	
Silver	ll		!	I		ll			
Sodium			l <u> </u>	<u>5000.0</u>	5371.72	107.4	5339.78	106.81	† P
Thallium	l l		ll		•	۱ <u> </u>		l	
Vanadium	<u> </u>		!!			l			1
Zinc			lI	lI		l		l I	!
Cyanide	· •		11	1		1			ļ —
1	lI		l			1			

¹⁾ Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

3 BLANKS

Lab Name: E.S.E.

Contract: NVY-CDLF

Lab Code:

Case No.:

SAS No.:

SDG.No.: G21088

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L

	Initial Calib. Blank		Cont		ing Calil Lank (ug/1		ntion		
Analyte	(ug/L)	C	1	C	2	Ć	3	CII	
Aluminum Antimony		 - -				_ _		_	
Arsenic Barium	***************************************	_				 - -		_ _	
Beryllium Cadmium Calcium	3.0	<u>u</u>	3.0	<u>u</u>	3.0	<u>U</u>	3.	<u>0 u </u>	3.0 U P
Chromium		_ _		_		 - 		-¦-¦¦ -¦-¦¦	
Copper Iron	6.2	ייין <u>יי</u> ין	6.2	<u>u</u>	6.2	_	6.	_ _ 2 <u>U</u>	7.030 B P
Lead Magnesium	34.5	<u>U</u>	34.5	<u>U</u>	34.5	<u>U</u> !	34.	<u>5</u> <u>0</u> _ _	34.5 <u>U</u> P
Manganese Mercury		_			-	_		_¦_!! _!_!!	
Nickel Potassium Selenium		— —		_ _		 - 		_¦_¦! _¦_¦!	
Silver Sodium	59.7	<u>-</u>	59.7	<u></u>	59.7	_ ์บิ	59.	- - 7 0	95.790 B P
Thallium Vanadium								_ _	
Zinc Cyanide		 -		 				_¦_ _¦_ .	
· ;		' '	L	' '		1 1	1	1 1 1	i ii ii

4 ICP INTERFERENCE CHECK SAMPLE

Lab	Name:	<u>£.5.E.</u>		Cont	tract: NVY-CD	Y-CDLF			
Lab	Code:		Case No:	SAS	No.:	SDG No.:	<u>G21088</u>		
ICP	ID Numi	ber: <u>JA1100</u>	CLP	ICS	Source:				

Concentration Units: ug/L

	Tı	rue	Initial Found			Final Found				
,	Sol.	Sol.	Sol.	Sol.		Sol.	Sol.			
Analyte	A	AB	A	AB	%R	A	AB	%R		
Aluminum				1	1		·	- 1		
Antimony					i			- <u> </u>		
Arsenic				i	i			-		
Barium			***************************************	i	i —			-¦		
Beryllium				i	i			-		
Cadmium		1000		956.1	95.6		970.2	97.0		
Calcium				i	1-3.0		110, 2	-1-7-0		
Chromium				·	'			- ¦		
Cobalt -				·	i			-¦		
Copper				· i	·¦			-¦		
Iron	200,000	200,000	178.094	177, 252	88.1	176145	178.756	89.4		
Lead		000		947.4	94.7	1.0,00	946.8.	94.7		
Magnesium					1		1 14.0.			
Manganese					·	· ————		- i		
Mercury				i	\			-¦		
Nickel								-¦		
Potassium			****	1		 .		- <u> </u>		
Selenium				i	i			- <u> </u>		
Silver -					i	·		-¦		
Sodium				1	·			-¦		
Thallium_								-¦		
Vanadium_				1	· i — — —			-¦		
Zinc				i	·			-:		

5A SPIKE SAMPLE RECOVERY

EPA SAMPLE NO.

Lab Name:	E.S.E.	Contract:	NVY-CDLF	i	FD#S	
				ı		

Lab Code:

Case No.:

SAS No.:

SDG.No.: G21088

Level (low/med):

% Solids for Sample: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

			· · · · · · · · · · · · · · · · · · ·			······································		
<u>;</u>	! Control		[!	1				 !
1		Spiked Sample	Sample	!	Spike		!	! !
Analyte	l %R	Result (SSR) C		Сİ	Added (SA)	¦ %R	Q	· I M
!	!	l	!	Ĭ	naaca (bn)	!	!	 !
Aluminum			·	-;			i-	¦—
Antimony	!		·	-;		·	<u> </u>	; —
Arsenic				-i		`	ì-	ì—
Barium	1		1	-1		l .	<u>-</u>	i ——
Beryllium	!	{	1	-			<u> </u>	:
Cadmium	75-125	45.31001	3.00001	ŪΙ	50.00	90.6	-	I P
Calcium	1	1	1	_!			ı —	l
Chromium	}	1	1	-1		[1	!
Cobalt	l	111	1	_1		1	١_	!
Copper	1	<u> </u>	1	-1		!	Ι_	
Iron	1	56499.6100	1 57782.37001	_	1000.00	1 -128.3	!_	P
Lead	l <u>75-125</u>	l503.1100l_	1 <u>39.0000</u> 1	_1	500.00	92.8	Ι_	P
Magnesium		1	1	_!		ł	1_	١
Manganese	<u> </u>			_		f	1_	١
Mercury	!			_ !		1	! _	l
Nickel	<u> </u>]		_ 1		1	!	} <u> </u>
Potassium	! 	<u> </u>	!!	_!	-	!	l	١
Selenium		! <u> </u>	<u> </u>	_ [· · · · · · · · · · · · · · · · · · ·	!	!	!
Silver	1 75 405	<u> </u>	<u> </u>	_!		!	!	!
Sodium	75-125	34237.6600	24578.7800	_!	10000.00	96.6	!_	! <u>P</u>
Thallium	<u> </u>	<u> </u>		_!		<u> </u>	!_	!
Vanadium_	<u> </u>	İ ————————————————————————————————————		_!		! ———	!_	!
Zinc	İ	[<u> </u>	!		<u> </u>	!-	!
Cyanide	1	1	<u> </u>	— !]	!	!
1 1	I .	1 i	1· j	i		i	i	i

Comme	nts:									
	i	 								
	X	 -	 	 	 					

FORM V (Part 1) - IN

5A SPIKE SAMPLE RECOVERY

EPA SAMPLE NO.

Lab Name: E.S.E.

Contract: NVY-CDLF

FD#S

Lab Code:

Case No.:

SAS No.:

SDG.No.: G21088

Matrix (soil/water): WATER

Level (low/med):

% Solids for Sample:

0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

1	 Control	 	1	 			_!
1		Spiked Sample	Sample	Spike		i	
Analyte	¦ %R	Result (SSR) C		Added (SA)	%R (ρİ	M
1	l	l		!	l <u></u> l	_	!
Aluminum	I	ll	11_		1	-	t
Antimony	l	ll_	1			_!_	_!
Arsenic	l	1 I	1	1	l l _	_;_	_!
Barium	1	ll	1			_;_	71
Beryllium		ll	1		l	_ I _	_
Cadmium	l <u>75-125</u>	47.6600	13.000010	50.00	95.31	ΙP	,
Calcium	l	ll	1		l - l -		${i}$
Chromium	1	ll	1	1		_!_	_¦
Cobalt	1	l l	1			_ _	-
Copper	I	11	1	1		- _I -	_ l
Iron	I	! <u>58404.7500</u> !	157782.37001	1 1000.00	62.21	! P	,
<u>Lead</u>	l 75-125	523.1100	39.00001	500.00	96.81	- F	7-1
<u>Magnesium</u>		ll	1	1		_,_	_1
<u>Manganese</u>	l	11	1		l	_ ; _	- ۱
Mercury	l	l l		1	! !	_¦_	<u> </u>
Nickel	!	l	1	1	! !	_ ;	_;
Potassium	l	l			} <u> </u>	- _I -	_
Selenium	1	l l			! !	_!_	
Silver	1	l	11		1	- _I -	- ا
Sodium	1 75-125	35009.3100	1 24578.78001	1 10000.00	104.31	- I F	<u> </u>
Thallium	1	11			! !	_,_	_
<u>Vanadium</u>		1				_ _	_¦
Zinc	1	1			1	_;_	-,
Cyanide	1			1	1	_ _	-
1	1	1			1	_ _	_

Comments:		
V.		 · · · · · · · · · · · · · · · · · · ·
ı, f	 	

FORM V (Part 1) - IN

	6
DIIDI.T	CATES

EPA SAMPLE NO.

FD#D

Lab Name: E.S.E.

Contract: NVY-CDLF

Lab Code:

Case No.:

SAS No.:

SDG.No.: G21088

Matrix (soil/water): WATER

Level (low/med):

% Solids for Sample:

% Solids for Duplicate:

Concentration Units (ug/L or mg/kg dry weight): UG/L

	_ !				1 1	l	!	
1	Control			Dumitante (D)	711	ן מתמ	i	i i IM:
Analyte	Limit !	Sample (S)	CH	Duplicate (D)	CH	RPD	ļQ	i I ^v i i
Aluminum			!:		·,-¦¦		¦-	<u> </u>
Antimony			;-;;		·[-]	<u> </u>	<u> </u>	<u>'</u>
Arsenic			<u>'-</u> '		'	<u> </u>	¦-	<u>'</u>
Barium			;-;;		·;[;	ˈ	¦	¦
Beryllium		<u> </u>	<u> - </u>		¦-¦		;-	¦
Cadmium		3.0000	֓֞֓֓֓֞֜֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֡֓֓֡֓֡֓֓֡֓֓֡֝֓֡֓֡֝֓֡֓֡֝֡֓֡֓֡֓֡֡֝֡֡֓֡֡֓	3.0000	ប់ប	' '	;-	, p
Calcium	<u> </u>	3.0000	1911	3.0000	<u> ~ </u>	<u> </u>	<u> </u>	<u> </u>
Chromium	·		;-;;		·¦¦	<u>' </u>	<u>'</u> -	¦
Cobalt	<u></u>		i-; ;		·	`; ———`;	`i	<u>`</u>
Copper	<u> </u>	<u> </u>	<u>'-' i</u>		·¦-¦	' '	¦-	<u> </u>
Iron	 	57782.3700	i-i i	55454.4300	·¦-¦	4.1	` <u>i</u> —	P
Lead	·	39.0000	iti	38.0900	·i-;	2.4	_i_	P
Magnesium	<u></u> '	39:000	i-i i		·¦-;		`i-	¦
Manganese		1	$i^{-1}i$		·i-i]	i-	<u>;</u>
Mercury			i-; ;			<u>'</u>	i-	:
Nickel			i-i i		i-i	<u> </u>	i-	<u>'</u>
Potassium			i- i i		·;-;	·	;	; ——
Selenium			i-i i		-i-i	·	i i-	;
Silver	 		1-11		-1-1		i i –	<u> </u>
Sodium	50001	24578.7800	1-11	24107.2800	-i-i	1.9	i i —	I P
Thallium		1	1-11		1-1		ı	
Vanadium		ł	1-11		-	1		!
Zinc		[]	1-11		-1-1		ı i —	
Cyanide	1		1-11		- i - i	1	-	1
1	1	1	1711	7711	1-1		I I -	1

8 STANDARD ADDITION RESULTS

Lab Name:	<u>F. S. F</u> .	Contract:	NYY-COLF
Lab Code:	Case No	.: SAS No.:	SDG No.: <u>G21088</u>

Concentration Units: ug/L

EPA Sample No.	An	0 ADD ABS	1 ADD CON A	BS (2 AI	DD ABS	3 AI CON	ABS	Final Conc.	r
					ę,					
	生	DA	E	ZE	4	U	RL			
	E									
					• .					
	<u> -</u>			_						

FORM VIII - IN

7/88

4. CONTROL CHARTS

INORGANIC ANALYSES DATA PACKAGE SUPPLEMENT (LEVEL C / EPA-SW846) FOR NAVY CD LANDFILL

ANALYTICAL SERVICES QUALITY ASSURANCE CORRECTIVE ACTION FORM

1. Individual identifying the problem: Jeffshamis
Nature of problem: 3 NACDLWZ Samples (*10,14,15) mused
7 day hold time by 1 day. Expiration of HT (on 6/17)
was anticipated on 6/14/91, but instrument problems
prevented successful analysis until 6/18/91. Client was
in Formed on 6/18/91:
Signature: Jeffshamm Date relinquished: 7/22/9/
2. Individual determining corrective action: KW Mlen Date received: 7(22/91
Action to be taken: Service call mas made to repair unit (Wahred Lyp).
It has been running more reliably since then
Signature: Date relinquished: 7/00/4/
3. Individual responsible for implementing action: KKAlen Date received: 7/02/9/
Signature: Date implemented: 2/32/4/
4. Individual responsible for assuring the effectiveness of the action: POPISIGAN Action taken to assure effectiveness: Review (and it runs since repair and periodically thereafter
Action taken to assure effectiveness: Review and it runs since repair
and periodically thereafter
Corrective action status: Acceptable Unacceptable
Signature: Portra O. Prisique Date: 7/22/91

Environmental Science & Engineering 07/20/91 STATUS: FINAL PAGE 1

PROJECT NUMBER 3914022 0201 FIELD GROUP NACDLW2

PROJECT NAME NAVY - CD LANDFILL LAB COORDINATOR J.D. SHAMIS

SAMPLE ID'S PARAMETERS UNITS	STORET METHOD	MW1 NACDLW2 1
DATE TIME		06/12/91 14:30
PH, LAB STD UNITS	403 I	4.37
SPECIFIC COND., LAB UMHOS/CM	95 I	927
TOX UG/L-CL	70353 I	97
HARDNESS MG/L-CACO3	900 TITR	328
CARBON, TOC MG/L	680 I	5.1

Environmental Science & Engineering 07/20/91 STATUS: FINAL PAGE PROJECT NUMBER 3914022 0201 PROJECT NAME NAVY - CD LANDFILL FIELD GROUP NACDLW2

STATUS: FINAL PAGE 2 LAB COORDINATOR J.D. SHAMIS

SAMPLE II	o's		MW2
PARAMETE	RS	STORET	NACDLW2
	UNITS	METHOD	2
DAME			06/12/01
DATE			06/12/91
TIME			08:30
PH, LAB		403	5.18
	STD UNITS	Ī	
SPECIFIC	COND.,LAB	95	641
	UMHOS/CM	I	
TOX	·	70353	3.3
	UG/L-CL	I	
HARDNESS		900	208
	MG/L-CACO3	TITR	
CARBON, TO	OC .	680	15.7
	MG/L	·	

Environmental Science & Engineering
PROJECT NUMBER 3914022 0201 PRO
FIELD GROUP NACDLW2 LAE

07/20/91 STATUS: FINAL PAGE 3
PROJECT NAME NAVY - CD LANDFILL
LAB COORDINATOR J.D. SHAMIS

SAMPLE ID'S		MW3
PARAMETERS	STORET	NACDLW2
UNITS	METHOD	3
DATE		06/12/91
TIME		12:00
PH, LAB	403	6.19
STD UNITS	I	
SPECIFIC COND., LAB	95	322
UMHOS/CM	I	
TOX	70353	59
UG/L-CL	I	
HARDNESS	900	132
MG/L-CACO3	TITR	
CARBON, TOC	680	4.7
MG/L	i I	

Environmental Science & Engineering PROJECT NUMBER 3914022 0201 FIELD GROUP NACDLW2

07/20/91 STATUS: FINAL PAGE 4
PROJECT NAME NAVY - CD LANDFILL
LAB COORDINATOR J.D. SHAMIS

SAMPLE ID'S PARAMETERS UNITS	STORET METHOD	MW4 NACDLW2 4
DATE TIME		06/12/91 09:30
PH, LAB STD UNITS	403 T	6.51
SPECIFIC COND., LAB UMHOS/CM	95 T	1410
TOX UG/L-CL	70353 T	39
HARDNESS	900	596
MG/L-CACO3 CARBON, TOC MG/L	TITR 680 I	14.1

Environmental Science & Engineering 07/20/91
PROJECT NUMBER 3914022 0201
PROJECT NAME
FIELD GROUP NACDLW2
LAB COORDINATOR

07/20/91 STATUS: FINAL PAGE 5
PROJECT NAME NAVY - CD LANDFILL
LAB COORDINATOR J.D. SHAMIS

STORET NACDLW2 NITS METHOD 5 06/12/91
06/12/91
06/12/91
11:15
403 6.21
900 220
G/L-CACO3 TITR
680 9.7
G/L I
TD UNITS I ND.,LAB 95 57 MHOS/CM I 70353 5 G/L-CL I 900 22 G/L-CACO3 TITR 680 9.

Environmental Science & Engineering
PROJECT NUMBER 3914022 0201
FIELD GROUP NACDLW2

07/20/91 PROJECT NAME

STATUS: FINAL PAGE 6 NAVY - CD LANDFILL

LAB COORDINATOR J.D. SHAMIS

	MW6
STORET	NACDLW2
METHOD	6
	06/12/91
	10:05
400	6 13
·	6.13
95	607
I	
70353	< 10
I	
900	288
TITR	
680	9.3
I	
	403 I 95 I 70353 I 900 TITR

Environmental Science & Engineering
PROJECT NUMBER 3914022 0201
FIELD GROUP NACDLW2

07/20/91 STATUS: FINAL PAGE 7 PROJECT NAME NAVY - CD LANDFILL LAB COORDINATOR J.D. SHAMIS

SAMPLE ID'S			FD#
PARAMETERS		STORET	NACDLW2
UNI	TS	METHOD	8
DATE TIME			06/12/91
PH,LAB	UNITS	403 I	4.39
SPECIFIC COND	.,LAB OS/CM	95 I	918
TOX	L-CL	70353 I	49
HARDNESS	L-CACO3	900 TITR	328
CARBON, TOC		680	4.1
MG/	ட	. 1	

Environmental Science & Engineering
PROJECT NUMBER 3914022 0201
FIELD GROUP NACDLW2

07/20/91 STATUS: FINAL PAGE 8
PROJECT NAME NAVY - CD LANDFILL
LAB COORDINATOR J.D. SHAMIS

SAMPLE ID'S PARAMETERS UNITS	STORET METHOD	FLDBLK NACDLW2 9
DATE TIME		06/12/91 15:20
PH, LAB STD UNITS	403 I	6.24
SPECIFIC COND., LAB UMHOS/CM	95 I	<10.00
TOX UG/L-CL	70353 I	< 10
HARDNESS MG/L-CACO3	900 TITR	<1.0
CARBON, TOC MG/L	680 I	< 1.0

Environmental Science & Engineering PROJECT NUMBER 3914022 0201 FIELD GROUP NACDLW2

07/20/91 STATUS: FINAL PAGE 9 PROJECT NAME NAVY - CD LANDFILL LAB COORDINATOR J.D. SHAMIS

SAMPLE ID'S		EQPBLK
PARAMETERS	STORET	NACDLW2
UNITS	METHOD	. 10
DATE		06/10/91
TIME		17:00
PH, LAB	403	6.48
STD UNITS	I	
SPECIFIC COND., LAB	95	<10.00
UMHOS/CM	I	
TOX	70353	10
UG/L-CL	I	
HARDNESS	900	<1.0
MG/L-CACO3	TITR	
CARBON, TOC	680	<1.0
MG/L	I	

Environmental Science & Engineering 07/20/91
PROJECT NUMBER 3914022 0201
PROJECT NAME
FIELD GROUP NACDLW2
PROJECT NAME
LAB COORDINAT

07/20/91 STATUS: FINAL PAGE 10 PROJECT NAME NAVY - CD LANDFILL LAB COORDINATOR J.D. SHAMIS

SAMPLE ID'S PARAMETERS UNITS	STORET METHOD	EQPBLK NACDLW2 11
DATE TIME		06/12/91 15:15
PH, LAB STD UNITS	403 I	6.17
SPECIFIC COND., LAB UMHOS/CM	95 I	<10.00
TOX UG/L-CL	70353 I	< 10
HARDNESS MG/L-CACO3	900 TITR	<1.0
CARBON, TOC MG/L	680 T	<1.0

Environmental Science & Engineering PROJECT NUMBER 3914022 0201 FIELD GROUP NACDLW2

07/20/91

STATUS: FINAL

PAGE 11

PROJECT NAME NAVY - CD LANDFILL LAB COORDINATOR J.D. SHAMIS

	SW2
STORET	NACDLW2
METHOD	14
	06/10/91
	14:30
403	7.88
I	
95	320
I	
70353	13
ı	
900	172
TITR	
680	5.2
I	
	403 I 95 I 70353 I 900 TITR

Environmental Science & Engineering
PROJECT NUMBER 3914022 0201
FIELD GROUP NACDLW2

07/20/91 STATUS: FINAL PAGE 12 PROJECT NAME NAVY - CD LANDFILL LAB COORDINATOR J.D. SHAMIS

SAMPLE ID	'S		SW3
PARAMETER	S	STORET	NACDLW2
	UNITS	METHOD	15
DATE			06/10/91
TIME			14:00
PH,LAB		403	7.17
	STD UNITS	I	
SPECIFIC	COND.,LAB	95	409
	UMHOS/CM	I	
TOX		70353	84
	UG/L-CL	I	
HARDNESS		900	180
	MG/L-CACO3	TITR	
CARBON, TO	C	680	7.0
	MG/L	I	

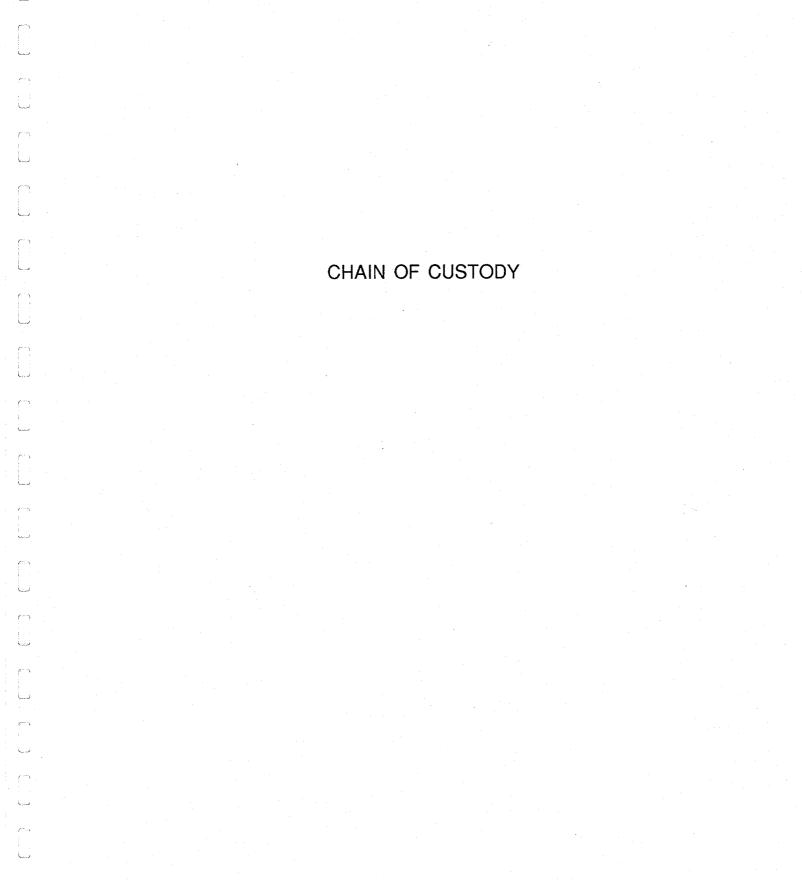
	ESE BATCH	: G20647										
٠	SAMPLE	cı	LIENT									
	CODE		1D									
()	NACDLW2*10		QPBLK									
	NACDLW2*14		N2									
استنا	NACDLW2*15	ŞI	W3									
grama.	Continuing	Calibration Blank	k Sample Summan	ry								
	DATE	SAMPLE	STORET	PARAMETER			UNITS	FOUND				
مينت	06/11/91	CCB*QC*1	403*·I	PH,LAB			STD UNITS	7.31			,	
`	Continuing	Calibration Veri	fication Sampl	e Summary								
İ.	DATE	SAMPLE	STORET	PARAMETER			UNITS	TARGET	FOUND	%RECV	RECV CRIT	
14	06/11/91	CCV*QC*1	403*1	PH,LAB			STD UNITS	7.00	0.11	1.57	0-0	•
()	Method Blar	nk Sample Summary										
ا ا	DATE	SAMPLE	STORET	PARAMETER			UNITS	FOUND				
	06/11/91	MB*QC*1	403×1	PH,LAB			STD UNITS	6.89				
ķ. 14	Replicate A	Analysis Sample S	ummary									
است	DATE	SAMPLE	STORET	PARAMETER			UNITS	REP #1	REP #2	RPD	RPD CRIT	
	06/11/91	RP*NACDLW2*14	403*I	PH_LAB	***************************************		STD UNITS		7.88	0.0	4	
5	06/11/91	RP*NACDLW2*15	403×1	PH,LAB			STD UNITS		7.17	0.0	.4	
			Computer Q	C Checks								
			Jompace, 4	o oncoks	_	"Exc	eptions"					
(-)	Analysis h	olding time withi	n criteria?		Yes 1	lo <u>Com</u>	ment / Corr	ective /	Action			
مرسية	Extract ho	lding time within	criteria?		X							
	Sample rep	licate present?			X							
		licate within acc	eptance criter	ia?	X							
استنا	, ,											

E E	SE BATCH	: G20687												
م سنا	AMPLE		CLIENT											
	ODE		ID											
	IACDLW2*1		MW1											
	IACDLW2*2		MW2											
-	IACDLW2*3		WM3											
	IACDLW2*4		MW4							~				
	ACDLW2*5		MW5											
	IACDLW2*6		MW6											
	ACDLW2*8		FD#											
	ACDLW2*9		FLDBLK											
N	NACDLW2*11		EQPBLK											
f	Continuina	Calibration B	lank Sam	ple Summa	ru									
1														
E	ATE	SAMPLE		STORET	PARAMETER			UNITS	FOUND:					
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ind (ont murng	Calibration V	erificat	Ton Sampi	e summary									
	DATE	SAMPLE		STORET	PARAMETER	 		UNITS	TARGET	FOUND	%RECV	RECV CF	<u> 11</u>	
F> (06/13/91	CCV*QC*1		403*!	PH,LAB			STD UNITS	7.00	0.25	3.57	0-0		
L 1	1ethod Bla	nk Sample Summ	ary											
r	DATE	SAMPLE		STORET	PARAMETER			UNITS	FOUND					
	06/13/91	MB*QC*1		403*1	PH_LAB	 		STD UNITS						
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سن	Replicate	Analysis Sampl	e Summar	y					÷					
c= [DATE	SAMPLE		STORET	PARAMETER			UNITS	REP #1	REP #2	RPD	RPD	CRIT	
	06/13/91	RP*NACDLW2*8		403×1	PH_LAB	 		STD UNITS	4.39	4.40	0.23			
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							"Exc	eptions"						
سننا						Yes			ective A	ction				•
,	Analysis h	olding time wi	thin cri	teria?		X								
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1	extract no	iding time wit	nin crit	eria?		X								
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		licate present				X								
· ()	sample rep	licate within	acceptan	ice criter	lar	X								

F	ESE BATCH	: G20780									
	SAMPLE		CLIENT								
	NACDLW2*8		FD#								
erra	NACDLW2*1		MW 1								
	NACDLW2*1		MW2								
1 1			MW3					1.			
الهنديت	NACDLW2*3										
	NACDLW2*4		MW4								
Liz. 159	NACDLW2*5		MW5								
-	NACDLW2*6		MW6								
ا التنت	NACDLW2*9		FLDBLK								
	NACDLW2*10		EQPBLK								
40.75	NACDLW2*11		EQPBLK								
F	NACDLW2*14		SW2								
	NACDLW2*15		SM3								
المستعة .				0							
	Continuing	Calibration ve	erification Sample	Summary							
(m)	DATE	SAMPLE	STORET	PARAMETER		UNITS	TARGET	FOUND	%RECV	RECV CRI	τ.
	06/17/91	CCV*QC*1	900*TITR	HARDNESS			CAC031000	1000	100.0	85-115	
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	Method Bla	nk Sample Summa	aru								
r		. '									
11	DATE	SAMPLE	STORET	PARAMETER		UNITS	FOUND				
	06/17/91	MB*QC*1	900*TITR	HARDNESS		MG/L-	CACO3ND				
		•									
L	Reference	Sample Summary									
1 .	DATE	SAMPLE	STORET	PARAMETER		UNITS	KNOWN	FOUND	%RECV		
السنت	DATE 06/17/91	RF*ERA*9929	900*TITR	HARDNESS			-CAC03338	336	99.4	- .	
	00/17/71	IIICHH 2222	,00 17111			, 2	011202200		,,,,		
F-1	Standard M	atrix Spike Rec	covery Summary								
				5.5.45755	. '	4050 1			****	FOUND	
أهبت	DATE	SAMPLE	STORET	PARAMETER		%REC\			TARGET	FOUND	
	06/17/91	SP1*QC*1	900×TITR	HARDNESS		100.6	85-115	MG/L-CACO	031000	1000.	
ron	0 N-E	-1O-11 D	Cummanu								
	Sample hat	rix Spike Reco	very summary								
Lui	DATE	CAMBIE	STODET	PARAMETER		%REC\	/ PECV CDI	T UNSPIKED	UNITS	TARGET	FOUND
	DATE	SAMPLE SPM1*NACDLW2	*8 900*TITR	HARDNESS		100.0		328	MG/L-CA		200
	06/17/91						85-115		MG/L-CA		200
i	06/17/91	SPM2*NACDLW2	*8 900*TITR	HARDNESS		100.	03-113	328	HG/L-CA	C03200	200
1			Computer QC	Checks							
			Compacer Qu	onecks.		"Exception:	,"				
					Yes No		Corrective	Action			
$G_{\mathcal{A}}$	Anatucie h	olding time wi	thin criteria?		<u> </u>	O Dilling 110 /	0011000110	11001011			
1 1	Allargara r	ording cime wi	CHILL CLIDELIA.		^						
تصا	Extract be	iding time with	hin criteria?		X						
erra.	Method bla	nk present?			X						
1.5			ptance criteria?		Χ		,				
i i											
المناشينا	Standard m	atrix spike pr	esent?		X ·						
			thin acceptance cr	riteria?	X						
2775											
	Sample mat	rix spike pres	ent?		X .				V		
استأ			in acceptance cri	teria?	X		t.				
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-	ESE BATCH	: G21150													
	LOL DATOR	. 021130													
	SAMPLE		CLIENT	r _.											
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	NACDLW2*1		MW I												
	NACDLW2*2		MW2												
	NACDLW2*3		MW3 MW4												
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•	NACDLW2*6		MW6												
()	NACDLW2*8		FD#												
	NACDLW2*9		FLDBL	K											
المستند	NACDLW2*11		EQPBLE	K											
	NACDLW2*10		EQPBL	K											
()	NACDLW2*14		SW2												
	NACDLW2*15		SM3												
البينا	Continuing	Calibration V	orificat	tion Samol	e Summaru										
	DATE	SAMPLE	el II (Ca	STORET	PARAMETER			UNITS	TARGET	FOUND)	%RECV	RECV CRIT	Г	
	06/19/91	CCV*QC*1		70353*I	TOX			UG/L-CI		230		100	73-125		
1															
السيا	Method Blan	k Sample Summ	ary												
	DATE	SAMPLE	· ·· · · · · · · · · · · · · · · · · ·	STORET	PARAMETER			UNITS	FOUND						
	06/19/91	MB*QC*1		70353*1	TOX			UG/L-CI	. 4						
1	Chardend Ma	Anton Calles Da		Cummanu											
التنسيا	DATE	trix Spike Re SAMPLE	covery	STORET	PARAMETER			%RECV	RECV CRIT	UNITS		TARGET	FOUND		
	06/19/91	SP1*0C*1		70353*1	TOX			99	73-125	UG/L-(CL	300	300		
	00, 13, 71	01 1 40 1													
	Sample Matr	ix Spike Reco	overy Su												
	DATE	SAMPLE		STORET	PARAMETER		·	%RECV	RECV CRIT		KED	UNITS	TARGET	FOUND	_
	DATE 06/19/91	SAMPLE SPM*NACDLW2*	(8	STORET 70353*1	TOX			86	73-125	49	KED	UG/L-CL	400	340	_
	DATE	SAMPLE	(8	STORET		· · · · ·					KED			~~~~~~~	_
	DATE 06/19/91	SAMPLE SPM*NACDLW2*		STORET 70353*1 70353*1	TOX TOX	·		86	73-125	49	KED	UG/L-CL	400	340	_
	DATE 06/19/91	SAMPLE SPM*NACDLW2*		STORET 70353*1	TOX TOX		"Exce	86 90	73-125	49	KED	UG/L-CL	400	340	_
	DATE 06/19/91	SAMPLE SPM*NACDLW2*		STORET 70353*1 70353*1	TOX TOX	Yes		86 90 ptions"	73-125	49 49	KED_	UG/L-CL	400	340	_
. p	DATE 06/19/91 06/19/91	SAMPLE SPM*NACDLW2*	₹8 2×8	STORET 70353*I 70353*I Computer (TOX TOX	Yes		86 90 ptions"	73-125 73-125	49 49	KED	UG/L-CL	400	340	
	DATE 06/19/91 06/19/91 Analysis ho	SAMPLE SPM*NACDLW2* SPM2*NACDLW2	₹8 2×8	STORET 70353*I 70353*I Computer (TOX TOX		No Comm	86 90 ptions"	73-125 73-125	49 49	KED	UG/L-CL	400	340	_
	DATE 06/19/91 06/19/91 Analysis ho Method blan	SAMPLE SPM*NACDLW2* SPM2*NACDLW2 Iding time wilk present?	*8 2*8 ithin cr	STORET 70353*1 70353*1 Computer (TOX TOX	X	No Comm	86 90 ptions"	73-125 73-125	49 49	KED	UG/L-CL	400	340	_
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	DATE 06/19/91 06/19/91 Analysis ho Method blan	SAMPLE SPM*NACDLW2* SPM2*NACDLW2 Iding time with present? k within acce	48 2*8 ithin cr	STORET 70353*1 70353*1 Computer (TOX TOX	X X	No Comm	86 90 ptions"	73-125 73-125	49 49	KED	UG/L-CL	400	340	
	DATE 06/19/91 06/19/91 Analysis ho Method blan Method blan Standard ma	SAMPLE SPM*NACDLW2* SPM2*NACDLW2 Iding time with present? It within accessority spike pr	*8 2*8 ithin cr eptance	STORET 70353*I 70353*I Computer (iteria? criteria?	TOX TOX IC Checks	X X	No Comm	86 90 ptions"	73-125 73-125	49 49	KED	UG/L-CL	400	340	
	DATE 06/19/91 06/19/91 Analysis ho Method blan Method blan Standard ma	SAMPLE SPM*NACDLW2* SPM2*NACDLW2 Iding time with present? k within acce	*8 2*8 ithin cr eptance	STORET 70353*I 70353*I Computer (iteria? criteria?	TOX TOX IC Checks	X X	No Comm	86 90 ptions"	73-125 73-125	49 49	KED	UG/L-CL	400	340	
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	DATE 06/19/91 06/19/91 Analysis ho Method blan Method blan Standard ma Standard ma	SAMPLE SPM*NACDLW2* SPM2*NACDLW2 Idding time with present? Ik within acceptainty spike protein spike with the spike with the spike with the spike presents	*8 2*8 ithin cr eptance resent? ithin ac sent?	STORET 70353* 70353* Computer (iteria? criteria?	TOX TOX C Checks	X X X	No Comm	86 90 ptions"	73-125 73-125	49 49	KED	UG/L-CL	400	340	
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F	ESE BATCH	: 021154									
1 .											
	SAMPLE		CLIENT								
الاربيا											
	CODE		1 D								
	NACDLW2*1		MWI								
62.15	NACDLW2*2		MW2								
	NACDLW2*3		MM3								
الاستنجأ	NACDLW2*4		MW4								
	NACDLW2*5		MW5								
F-7	NACDLW2*6		MW6								
	NACDLW2*8		FD#								
	NACDLW2*9		FLDBLK								
المستنب											
	NACDLW2*10		EQPBLK								
	NACDLW2*11		EQPBLK								
5	NACDLW2*14		SW2								
1	NACDLW2*15		SM3								
Sec. of											
	Method Blan	nk Sample Summa	aru '								
100							_				
1	DATE	SAMPLE	STORET	PARAMETER	<u> </u>	UNITS	FOUND				
	06/27/91	MB*QC*1	680*I	CARBON, TOC		MG/L	0.4				
تمنينا	06/27/91		680*1	•		MG/L					
		MB*QC*2		CARBON, TOC			ND				
	06/27/91	MB*QC*3	680×1	CARBON, TOC		MG/L	ND				
()	06/27/91	MB*QC*4	680*l	CARBON, TOC		MG/L	ND				
1											
	Dafamanaa (lamala Commano									
100	Reference S	Sample Summary									
	DATE	SAMPLE	STORET	PARAMETER		UNITS	KNOWN	FOUND	%RECV		
	06/27/91	RF*ERA*9933	680*1	CARBON_TOC		MG/L	24.0	23.6	98.3	-	
	00/2///1	IIIEIIW) 222	000.1	, chilbon, roc		1107 C	24.0	23.0	70.3		
الاروادة											
	Standard Ma	atrix Spike Rec	covery Summary								
r	DATE	SAMPLE	STORET	PARAMETER		%RECV	RECV CRIT	UNITS	TARGET	FOUND	
	06/27/91	SP1*QC*1	680×1	CARBON, TOC		101	87-113	MG/L	20.0	20.1	
المنصينا	06/27/91	SP2*QC*1	680×1	CARBON, TOC		96.5	87-113	MG/L	20.0	19.3	
	06/27/91	SP3*QC*1	680*i	CARBON, TOC		98.0	87-113	MG/L	20.0	19.6	
	06/27/91	SP4*QC*1	680×1	CARBON, TOC		93.5	87-113	MG/L		18.7	
la de	00/21/)1						01-112	HO/L	20.0		
						/5.5				10.7	
						/3.5					
	Sample Matr	ix Spike Recov				73.3				1017	
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		rix Spike Recov	very Summary				RECV CRIT	UNSPIKED	UNITS		FOLIND
· 	DATE	rix Spike Recov	very Summary STORET	PARAMETER		%RECV_	RECV CRIT		UNITS	TARGET	FOUND
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· · ·	DATE	rix Spike Recov	very Summary STORET	PARAMETER	***************************************	%RECV_				TARGET	
	DATE 06/27/91	TIX Spike Recov SAMPLE SPMI*NACDLW2*	very Summary STORET	PARAMETER CARBON TOC		%RECV 101	87-113	4.1	MG/L	TARGET 20.0	20.1
(DATE 06/27/91	TIX Spike Recov SAMPLE SPMI*NACDLW2*	STORET STORET *8 680* *8 680*	PARAMETER CARBON TOC		%RECV 101	87-113	4.1	MG/L	TARGET 20.0	20.1
(DATE 06/27/91	TIX Spike Recov SAMPLE SPMI*NACDLW2*	STORET STORET *8 680* *8 680*	PARAMETER CARBON TOC CARBON TOC		%RECV 101 101	87-113 87-113	4.1	MG/L	TARGET 20.0	20.1
(DATE 06/27/91	TIX Spike Recov SAMPLE SPMI*NACDLW2*	STORET STORET *8 680* *8 680*	PARAMETER CARBON TOC CARBON TOC		%RECV 101 101 "Exceptions"	87-113 87-113	4.I 4.I	MG/L	TARGET 20.0	20.1
(DATE 06/27/91 06/27/91	SAMPLE SPMI*NACDLW29 SPM2*NACDLW29	STORET STORET *8 680* *8 680* Compute	PARAMETER CARBON TOC CARBON TOC	Yes No	%RECV 101 101	87-113 87-113	4.I 4.I	MG/L	TARGET 20.0	20.1
	DATE 06/27/91 06/27/91 Analysis ho	SAMPLE SPMI*NACDLW2* SPM2*NACDLW2*	very Summary STORET 8 680* 8 680* Compute	PARAMETER CARBON TOC CARBON TOC		%RECV 101 101 "Exceptions"	87-113 87-113	4.I 4.I	MG/L	TARGET 20.0	20.1
	DATE 06/27/91 06/27/91 Analysis ho	SAMPLE SPMI*NACDLW2* SPM2*NACDLW2*	very Summary STORET 8 680* 8 680* Compute	PARAMETER CARBON TOC CARBON TOC	Yes No	%RECV 101 101 "Exceptions"	87-113 87-113	4.I 4.I	MG/L	TARGET 20.0	20.1
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	DATE 06/27/91 06/27/91 Analysis ho Extract hol	SAMPLE SPMI*NACDLW29 SPM2*NACDLW29 biding time with iding time with hk present?	very Summary STORET 8 680*1 Compute thin criteria?	PARAMETER CARBON TOC CARBON TOC	Yes No X X	%RECV 101 101 "Exceptions"	87-113 87-113	4.I 4.I	MG/L	TARGET 20.0	20.1
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	DATE 06/27/91 06/27/91 Analysis ho Extract hol Method blar Method blar	SAMPLE SPMI*NACDLW2* SPM2*NACDLW2* biding time withink present? nk within accep	STORET *8 680*! *8 680*! Compute thin criteria?	PARAMETER CARBON TOC CARBON TOC	Yes No X X X	%RECV 101 101 "Exceptions"	87-113 87-113	4.I 4.I	MG/L	TARGET 20.0	20.1
	DATE 06/27/91 06/27/91 Analysis ho Extract hol Method blan Method blan Standard ma	SAMPLE SPMI*NACDLW2* SPM2*NACDLW2* biding time withink present? hk within accepatrix spike pre	STORET *8 680*! *8 680*! Compute thin criteria? piance criteria	PARAMETER CARBON TOC CARBON TOC or QC Checks	Yes No X X	%RECV 101 101 "Exceptions"	87-113 87-113	4.I 4.I	MG/L	TARGET 20.0	20.1
	DATE 06/27/91 06/27/91 Analysis ho Extract hol Method blan Method blan Standard ma	SAMPLE SPMI*NACDLW2* SPM2*NACDLW2* biding time withink present? nk within accep	STORET *8 680*! *8 680*! Compute thin criteria? piance criteria	PARAMETER CARBON TOC CARBON TOC or QC Checks	Yes No X X X	%RECV 101 101 "Exceptions"	87-113 87-113	4.I 4.I	MG/L	TARGET 20.0	20.1
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	DATE 06/27/91 06/27/91 Analysis ho Extract hol Method blar Method blar Standard ma Standard ma	SAMPLE SPMI*NACDLW2* SPM2*NACDLW2* biding time with ding time with hk present? hk within accepatrix spike present spike within in accepatrix spike within in spike within spike within spike within spike within spike within spike within spike within spike within spike presents	STORET *8 680* *8 680* Compute thin criteria? ptance criteri esent? thin acceptance	PARAMETER CARBON TOC CARBON TOC or QC Checks a?	Yes No X X X X X X	%RECV 101 101 "Exceptions"	87-113 87-113	4.I 4.I	MG/L	TARGET 20.0	20.1
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	DATE 06/27/91 06/27/91 Analysis ho Extract hol Method blar Method blar Standard ma Standard ma	SAMPLE SPMI*NACDLW2* SPM2*NACDLW2* biding time with ding time with hk present? hk within accepatrix spike present spike within in accepatrix spike within in spike within spike within spike within spike within spike within spike within spike within spike within spike presents	STORET *8 680* *8 680* Compute thin criteria? ptance criteri esent? thin acceptance	PARAMETER CARBON TOC CARBON TOC or QC Checks a?	Yes No X X X X X X	%RECV 101 101 "Exceptions"	87-113 87-113	4.I 4.I	MG/L	TARGET 20.0	20.1
	DATE 06/27/91 06/27/91 Analysis ho Extract hol Method blar Method blar Standard ma Standard ma	SAMPLE SPMI*NACDLW2* SPM2*NACDLW2* biding time with ding time with hk present? hk within accepatrix spike present spike within in accepatrix spike within in spike within spike within spike within spike within spike within spike within spike within spike within spike presents	STORET *8 680* *8 680* Compute thin criteria? ptance criteri esent? thin acceptance	PARAMETER CARBON TOC CARBON TOC or QC Checks a?	Yes No X X X X X X	%RECV 101 101 "Exceptions"	87-113 87-113	4.I 4.I	MG/L	TARGET 20.0	20.1



	ronmental S ECT NUMBER					05-16-91 NAME: NAV					LD GROUP: FF SHAMIS	NACDLW2
SE #	SITE/STA MW1			ONE (S	(XP) KP	DAT	TE TIME	PARAMETER LIST		•		Heral sas
72) MW2	Ģ	$2 \odot$	NF &	XP XP	6-12-	91 8130	NACLDWA		Real	und	7-3
*3	2 MW3	(c)(N)	NF (S	XP XP	C-12-9		NACLDWA		12-40	** t	
*4) MW4	0	N	NF	(XP)(XP	6-12-21		NACLDWA			1	G.
* 5	MW 5	С	N	NF S	XP XP			NACLDWA				Truf-
*6	MW6	С	N	NF S	XP XP			NACLDWA	,			0/17
*7	MWBG	С	N	NF S	XP XP			NACLDWA				
*8	FD#	C	N	NF S	XP XP	XP XP		NACLDWA		7		· · · · · · · · · · · · · · · · · · ·
(*9)	FLDBLK	(c))W	NF (S	(XP/XP	//	1 15120	NACLDWA (50 450	e water		
*10	EQPBLK	C	N	NF S	XP XP			NACLDWA	12 1	weiter)	/ 	
*11	EQPBLK	С	N	NF S	XP XP			NACLDWA	LIGIE	000 ((4)		
*12	EQPBLK	С	N	NF S	XP XP	· · · · · · · · · · · · · · · · · · ·		NACLDWA				
*13	SW1	C	N	NF S	XP XP	*		NACLDWA	`	<u> </u>		
*14	SW2	С	N	NF S	XP XP			NACLDWA	······································			***
*15	SW3	C	N	NF S	XP XP			NACLDWA	 			
*16	SW4	С	N	NF S	XP XP			NACLDWA			, -	
*17	SW5	С	N	NF S	XP XP			NACLDWA		T/r	# 000	8401410
*18	SW6	С	N	NF S	XP XP			NACLDWA		TEN EX	006	010(7/0
NOTE	-CHANGE OR -CIRCLE FRA -HAZARD COD -PLEASE RET	ENTER SI CTIONS (ES: I=16N URN COMI	TE COLL TABLE PLET	ID AS ECTED. C=corrosi ED LOG	NECESSA ENTER VE R=REACT SHEETS	ARY; UP TO DATE, TIME, IVE T=TOXIC WASTE WITH SAMPI	9 ALPHANUM FIELD DATA H=OTHER ACUTE HA LES TO ENVI	MERIC CHARA (IF REQUI MAZARD: IDENTI TONMENTAL	CTERS RED), FY SPE Scienc	MAY BE US HAZARD CO CIFICS IF e and Eng	SED DE AND NO KNOWN Jineering,	TES
ELINQ	JISHED BY:	(NAME/O	RGAN	IZATIO	N/DATE/	TIME)	VIA:	REC'D	BY (NAME/ORGA	NIZATION	DATE/TIME)
$-\frac{1}{2}A$	ndrew Force	+/ES	E/	6-12-	ac/ 17	1:0D	Fed Ex	o VPre	m Os	ESE	6-13	1200
3		The second secon					· 			were their some later than their some some and		
SAMPLI SAMPLI	ER: MORE SA	MPLES TO	BE ly S	SHIPP eals I	ED? // ntact?	IF YES, A	NTICIPATED	# TO Preserva	SHIP O	N / / Audited?	Probl	ems?

Environmental Science and Engineering 05-16-91 *** FIELD LOGSHEET *** FIELD GROUP: NACDLW2 PROJECT NUMBER 3914022 0201 PROJECT NAME: NAVY - CD LANDFILL LAB COORD. JEFF SHAMIS SITE/STA HAZ? FRACTIONS (CIRCLE) ESE # TIME DATE PARAMETER LIST y- Meta Ana N NF S XP XP MW 1 NACLDWA *2 MW2 N NF S XP XP NACLDWA *3 MW3 NF S XP XP NACLDWA *****4 MW4 \mathbf{C} N NF S XP XP NACLDWA 11:15 NACLDWA MW₅ S 6-12-91 NF(S) *6 MW6 NACLDWA 10:05 6-12-91 NF S XP XP *7 MWBG NACLDWA (P)(X)(X) NF(S FD# NACLDWA *9 FLDBLK NF S N XP XP NACLDWA so urce water С NF S *10 EOPBLK N XP XP NACLDWA na ter NF/S KΡ €11 EOPBLK 15:15 -NACLDWA *12 EOPBLK C N NF S XP XP NACLDWA *13 NF S SW1 C N XP XP NACLDWA SW2 С N NF S XP XP NACLDWA *14 *****15 SW3 C Ν NF S XP XP NACLDWA *16 SW4 N NF S XP XP NACLDWA Fel Ex. # 0068401410 *17 SW5 NF S XP XP NACLDWA C N NF S SW6 XP XP NACLDWA *18 NOTE -CHANGE OR ENTER SITE ID AS NECESSARY; UP TO 9 ALPHANUMERIC CHARACTERS MAY BE USED
-CIRCLE FRACTIONS COLLECTED. ENTER DATE, TIME, FIELD DATA (IF REQUIRED), HAZARD CODE AND NOTES
-HAZARD CODES: I=IGNITABLE C=CORROSIVE R=REACTIVE T=TOXIC WASTE H=OTHER ACUTE HAZARD; IDENTIFY SPECIFICS IF KNOWN
-PLEASE RETURN COMPLETED LOGSHEETS WITH SAMPLES TO Environmental Science and Engineering, Inc. VIA: REC'D BY (NAME/ORGANIZATION/DATE/TIME) RELINOUISHED BY: (NAME/ORGANIZATION/DATE/TIME) Indian fecrest / ESE/c-12-a1/ 17:00 Feel Fe V. Peam Oct SAMPLER: MORE SAMPLES TO BE SHIPPED? / IF YES, ANTICIPATED # TO SHIP ON / /
SAMPLE CUSTODIAN: Custody Seals Intact? Samples Iced? Preservations Audited? Problems?

	conmental Scien			eering (PROJECT N	15-16-91. IAME: NAVY -			FIELD GROUP: NACDLW2 JEFF SHAMIS
3E #	SITE/STA HAZ?	FRAC C N	TIONS (C	CIRCLE) XP XP	DATE	TIME	PARAMETER LIST NACLDWA	37/8
*2	MW2	C N	NF S	XP XP			NACLDWA	
*3	MW3	C N	NF S	XP XP			NACLDWA	\mathcal{G}
*4	MW4	C N	NF S	XP XP			NACLDWA	my L
*5	MW 5	C N	NF S	XP XP			NACLDWA	6/17
*6	MW6	C N	NF S	XP XP			NACLDWA	,
*7	MWBG	C N	NF S	XP XP			NACLDWA	
*8	FD#	C N	NF S	XP XP X	XP XP		NACLDWA	
* 9	FLDBLK	C N	NF S	XP XP			NACLOWA (Source was	ter)
(10)	EQPBLK	ON	NF 🔊	XP(XP)	6-10-91	17:00	NACLOWA. Holab water	
*11	EQPBLK	C N	NF S	XP XP			NACLDWA	
*12	EQPBLK	C N	NF S	XP XP		3	NACLDWA	
*13	SW1	СИ	NF S	XP XP			NACLDWA	
*14)	SW2	(C) (A	NF S	(XP(XP)	6-10-91	18:30	NACLDWA, 1 * No Filt	er Metal Analysias
*15	SW3	ON) NF(S)	XP XP	6-10-81	14180	NACLDWA, & Requ	ired
*16	SW4	C N	NF S	XP XP			NACLDWA	
*17	SW5	C N	NF S	XP XP			NACLDWA	
*18	SW6	C N		XP XP			NACLDWA	
NOTE -	CHANGE OR ENTE CIRCLE FRACTIO HAZARD CODES: PLEASE RETURN	R SITE NS COL I=IGNITABL COMPLE	ID AS LECTED. E C=corros TED LOC	NECESSAF ENTER D IVE R=REACTIVE SSHEETS W	RY; UP TO 9 DATE, TIME, FI T=TOXIC WASTE H=	ALPHANUM ELD DATA OTHER ACUTE HA TO Envi	ERIC CHARACTERS MAY E (IF REQUIRED), HAZAF ZARD: IDENTIFY SPECIFIC ronmental Science and	BE USED RD CODE AND NOTES RS IF KNOWN R Engineering, Inc.
ELINQU	ISHED BY: (NAM	E/ORGA	NIZATIO	N/DATE/I	IME)	VIA:	REC'D BY (NAME/	ORGANIZATION/DATE/TIME)
1 A.	refren U. Forr	not /	ESE	16-10-	91/18:00	Esd	Ex V. Prem (b) ES	SE 6-11 1230
2								
3								
SAMPLE SAMPLE	R: MORE SAMPLE CUSTODIAN: Cu	S TO B	E SHIPE Seals I	PED?	IF YES, ANT / Samples	ICIPATED Iced?	# 8 TO SHIP ON <u>6/</u> Preservations Audit	led? / Problems? /
	Temp		_			8	monitor well sample	b + QC
	•	_	(IRD				AIR	MLI# 0068403016
								· · · · · · · · · · · · · · · · · · ·

STATUS:

PROJECT NUMBER 3914022 0201 PROJECT NAME NAVY - CD LANDFILL FIELD GROUP NACDLS LAB COORDINATOR J.D. SHAMIS

SAMPLE ID PARAMETERS		STORET	SO6U NACDLS
111111111111111111111111111111111111111	UNITS	METHOD	13
DATE TIME			02/26/91 07:35
PH,SED	STD.UNITS	70310	6.6
TOX, SED	UG/KG-DRY	99263 I	€ 62

SAMPLE INDENTIFICATION CROSS-REFERENCE

FIELD GROUP NACDLB

SITE ID	ESE ID
FLDBLK EQPBLK	NACDLB*1 NACDLB*4
FIELD GROUP	NACDLS 1
SITE ID	ESE ID
S01U S01L S02U S02L S03U S03L S04U S04L S05U S05L FD#1 S06L S06U SE1 SE2 SE3 SE4 SE5	NACDLS*1 NACDLS*2 NACDLS*3 NACDLS*4 NACDLS*5 NACDLS*6 NACDLS*7 NACDLS*8 NACDLS*9 NACDLS*10 NACDLS*11 NACDLS*11 NACDLS*12 NACDLS*13 NACDLS*14 NACDLS*15 NACDLS*17 NACDLS*17
ETELD CDOUD	NA CT DIST

FIELD GROUP NACLDW1

SITE ID	ESE ID
	* ***********************************
MW 1	NACLDW1 * 1
MW2	NACLDW1*2
MW3	NACLDW1*3
MW4	NACLDW1*4
MW5	NACLDW1*5
MW6	NACLDW1*6
FD#1	NACLDW1*8
FLDBLK	NACLDW1*9
EQPBLK	NACLDW1*10
EQPBLK	NACLDW1*11
SW2	NACLDW1*14
SW3	NACLDW1*15
SW4	NACLDW1*16

QC PROBLEMS / CORRECTIVE ACTIONS

QC OUTLIERS

The Sample Matrix spikes for NACLDW1*1 for Fe exceeded criteria (77-113% recovery) @ 136-220% recoveries due to the spiking level being insignificant relative to the unusually high background values for this sample. No significance is suggested for the unspiked data.

ANALYTICAL SERVICES QUALITY ASSURANCE CORRECTIVE ACTION FORM

^ ~	
1. Individual identifying the problem: <u>Jeff</u>	5 hamis
Nature of problem: Sample CC for re	on designated field dyplicates
held groups was not performed	on designated field dyplicates
as required for Nany samples.	This occurred fir all notals e RP for NALPS I, ptl and and Vimousture, ptl, and TOX for NACDI
analyses, and for do mostur	e RP for NALPS I, RH and
hardness for NACLOWI,	end "Smousture, ptl, and TOX for NACD,
Signature: Jeffhamur	Date relinquished:
2. Individual determining corrective action:	Date received:
Action to be taken: Thus required action.	+ will be recterated and
high lighted by the quality	nt will be resterated and real department managers and
their staff.	The state of the s
11611 27477.	
	A CONTRACTOR OF THE PROPERTY O
Signatura: 7.11 Min and	Date relinquished:
Signature: Jeff Manus	Date reiniquisited.
	1 M 7
3. Individual responsible for implementing action	on: John Date received:
Signature: Jeffshamm	Date implemented: 4/18/4/
4. Individual responsible for assuring the effect	iveness of the action: Posta Pisigan, CALUC
Action taken to assure effectiveness: Asse	ss that labs taff have knowledge
and understanding of Mi	s requirement
Corrective action status: Acceptable	Unacceptable
Signature:	Date:
cc: Kub	
KHA	

PREPARATION AND ANALYSIS HOLDING TIME EXCEEDANCE REPORT

REPORT DATE: 04/17/91

SAMPLE	ВАТСН	STORET	PARAMETER	DAYS EXCEEDED	FOOTNOTES
NACDLB*1	G18558	403*I	PH,LAB	1	1
NACDLB*4	G18558	403*I	PH, LAB	1	1
NACDLS*1	G18659	70310*I	PH, SED	6	2
NACDLS*2	G18659	70310*I	PH, SED	6	2
NACDLS*3	G18659	70310*I	PH,SED	6	2
NACDLS * 4	G18659	70310*I	PH,SED	6	2
NACDLS*5	G18658	70310*I	PH,SED	4	2
NACDLS*6	G18658	70310*I	PH,SED	4	2
NACDLS*7	G18659	70310*I	PH, SED	5	2
NACDLS*8	G18659	70310*I	PH,SED	5	2
NACDLS*9	G18516	70310*I	PH,SED	4	2
NACDLS*10	G18516	70310 * I	PH,SED	4	2
NACDLS*11	G18659	70310*I	PH,SED	5	2
NACDLS*12	G18659	70310*I	PH,SED	5	2
NACDLS*13	G18659	70310*I	PH,SED	5	2
NACDLS*14	G18516	70310*I	PH,SED	4	2
NACDLS*15	G18516	70310*I	PH,SED	4	2
NACDLS*16	G18516	70310*I	PH, SED	4	2
NACDLS*17	G18516	70310*I	PH,SED	4	2
NACDLS*18	G18516	70310*I	PH,SED	4	2
NACLDW1*8	G19294	70353*I	TOX	9	3
NACLDW1*11	G19294	70353*I	TOX	8	3

FOOTNOTES:

- 1 ANALYZED WITHIN 24 HRS OF RECEIPT FROM FIELD.
- 2 HOLDING TIME AS GUIDANCE ONLY FOR SOIL/SED MATRICES
- 3 UNFORSEEN INSTRUMENT FAILURE AND DELAYED REPAIRS CREATED EXCESS BACKLOG OF SAMPLES FOR TOX. THESE FIELD QC SAMPLES WERE WITHHELD FROM ANALYSIS TO ALLOW THE OTHER ENVIRONMENTAL SAMPLES TO BE ANALYZED WITHIN HOLDING TIMES.

DATA SUMMARIES ph & TOX, NACDLS

STATUS:

FIELD GROUP

PROJECT NUMBER 3914022 0201 NACDLS

PROJECT NAME NAVY - CD LANDFILL

SAMPLE ID PARAMETER		STORET METHOD	SO1U NACDLS 1
DATE TIME			02/25/91 16:35
PH,SED	CMD INTMC	70310	6.7
TOX, SED	STD.UNITS UG/KG-DRY	99263 I	19

Environmental Science & Engineering 04/16/91 STATUS:

PROJECT NUMBER 3914022 0201 PROJECT NAME NAVY - CD LANDFILL FIELD GROUP NACDLS

SAMPLE II			SOIL
PARAMETE	UNITS	STORET METHOD	NACDLS 2
DATE TIME			02/25/91 16:30
PH,SED		70310	6.8
TOX,SED	STD.UNITS UG/KG-DRY	99263 T	3

Environmental Science & Engineering 04/16/91 STATUS:

PROJECT NUMBER 3914022 0201 FIELD GROUP NACDLS

PROJECT NAME NAVY - CD LANDFILL LAB COORDINATOR J.D. SHAMIS

SAMPLE ID		STORET METHOD	SO2U NACDLS 3
DATE TIME			02/25/91 13:15
PH,SED	STD.UNITS	70310 T	6.4
TOX, SED	UG/KG-DRY	99263 I	21

STATUS:

FIELD GROUP NACDLS

PROJECT NUMBER 3914022 0201 PROJECT NAME NAVY - CD LANDFILL LAB COORDINATOR J.D. SHAMIS

SAMPLE ID PARAMETERS		STORET	SO2L NACDLS 4
DATE TIME			02/25/91 13:10
PH,SED	STD.UNITS	70310 I	6.6
TOX,SED	UG/KG-DRY	99263 I	44

Environmental Science & Engineering 04/16/91 STATUS:

FIELD GROUP NACDLS

PROJECT NUMBER 3914022 0201

PROJECT NAME NAVY - CD LANDFILL LAB COORDINATOR J.D. SHAMIS

SAMPLE II PARAMETEI		STORET METHOD	SO3U NACDLS 5
DATE TIME			02/22/91 11:50
PH,SED	CMD INTMC	70310	6.9
TOX, SED	STD.UNITS	99263 I	23

STATUS:

PROJECT NUMBER 3914022 0201 PROJECT NAME NAVY - CD LANDFILL FIELD GROUP NACDLS LAB COORDINATOR J.D. SHAMIS

SAMPLE ID'		STORET	SO3L NACDLS
PARAMETERS	UNITS	METHOD	6
DATE TIME			02/22/91 12:00
PH,SED	CMD UNITMC	70310	5.0
TOX, SED	UG/KG-DRY	99263 I	10

Environmental Science & Engineering 04/16/91 STATUS:

FIELD GROUP NACDLS

PROJECT NUMBER 3914022 0201

PROJECT NAME NAVY - CD LANDFILL

SAMPLE II		STORET	SO4U NACDLS
THIMIDIDI	UNITS	METHOD	7
DATE TIME			02/26/91 18:30
PH, SED	STD.UNITS	70310	6.6
TOX, SED	UG/KG-DRY	99263 I	78

Environmental Science & Engineering 04/16/91 STATUS:

PROJECT NUMBER 3914022 0201 FIELD GROUP NACDLS

PROJECT NAME NAVY - CD LANDFILL

SAMPLE ID		STORET	SO4L NACDLS
	UNITS	METHOD	8
DATE TIME			02/26/91 18:45
PH,SED	STD.UNITS	70310 I	6.7
TOX,SED	UG/KG-DRY	99263 I	64

STATUS:

FIELD GROUP NACDLS

PROJECT NUMBER 3914022 0201

PROJECT NAME

NAVY - CD LANDFILL

SAMPLE ID		SO5U		
PARAMETERS		STORET	NACDLS	
	UNITS	METHOD	9	
DATE			02/20/91	
TIME			16:15	
PH,SED		70310	6.6	
	STD.UNITS	I		
TOX,SED		99263	40	
	UG/KG-DRY	I		

Environmental Science & Engineering 04/16/91 STATUS:

FIELD GROUP NACDLS

PROJECT NUMBER 3914022 0201

PROJECT NAME NAVY - CD LANDFILL

SAMPLE II PARAMETEI		STORET METHOD	SO5L NACDLS 10
DATE TIME			02/20/91 16:30
PH,SED	STD.UNITS	70310	6.8
TOX,SED	UG/KG-DRY	99263 I	35

STATUS:

PROJECT NUMBER 3914022 0201 FIELD GROUP NACDLS

PROJECT NAME NAVY - CD LANDFILL LAB COORDINATOR J.D. SHAMIS

SAMPLE ID PARAMETER		STORET METHOD	FD#1 NACDLS 11
DATE TIME			02/26/91 16:35
PH,SED	STD.UNITS	70310 T	6.8
TOX, SED	DID:ONIID	99263	The
	UG/KG-DRY	I	718

STATUS:

FIELD GROUP

NACDLS

PROJECT NUMBER 3914022 0201 PROJECT NAME NAVY - CD LANDFILL

SAMPLE ID PARAMETER		STORET METHOD	SO6L NACDLS 12
DATE TIME			02/26/91 07:40
PH,SED	STD.UNITS	70310	6.8
TOX,SED	UG/KG-DRY	99263 I	9

FIELD GROUP

PROJECT NUMBER 3914022 0201 NACDLS

PROJECT NAME NAVY - CD LANDFILL LAB COORDINATOR J.D. SHAMIS

SAMPLE ID PARAMETER		STORET METHOD	SE1 NACDLS 14
DATE TIME			02/20/91
PH,SED	STD.UNITS	70310	7.5
TOX, SED	UG/KG-DRY	99263 I	2

STATUS:

PROJECT NUMBER 3914022 0201 FIELD GROUP

NACDLS

PROJECT NAME NAVY - CD LANDFILL

SAMPLE ID PARAMETER		STORET METHOD	SE2 NACDLS 15
DATE TIME			02/20/91 09:45
PH,SED	C=====0	70310	6.8
TOX, SED	STD.UNITS UG/KG-DRY	99263 I	440

Environmental Science & Engineering 04/16/91

STATUS:

PROJECT NUMBER 3914022 0201 FIELD GROUP

NACDLS

PROJECT NAME NAVY - CD LANDFILL LAB COORDINATOR J.D. SHAMIS

SAMPLE ID PARAMETERS		STORET METHOD	SE3 NACDLS 16
DATE TIME			02/20/91 08:30
PH, SED	STD.UNITS	70310 T	6.5
TOX, SED	UG/KG-DRY	99263 I	1400

Environmental Science & Engineering 04/16/91

STATUS:

PROJECT NUMBER 3914022 0201 FIELD GROUP NACDLS

PROJECT NAME NAVY - CD LANDFILL

LAB COORDINATOR J.D. SHAMIS

SAMPLE ID PARAMETER		STORET METHOD	SE4 NACDLS 17
DATE TIME			02/20/91 11:30
PH,SED	STD.UNITS	70310 T	6.9
TOX, SED	UG/KG-DRY	99263 I	10

Environmental Science & Engineering 04/16/91

STATUS:

PROJECT NUMBER 3914022 0201 PROJECT NAME NAVY - CD LANDFILL FIELD GROUP NACDLS LAB COORDINATOR J.D. SHAMIS

SAMPLE ID		STORET	SE5 NACDLS
	UNITS	METHOD	18
DATE TIME			02/20/91 11:10
PH,SED	STD.UNITS	70310 T	6.8
TOX, SED	UG/KG-DRY	99263 I	40

QC SUMMARY FOR NACLDS FOR NON-CLP FORM ANALYTES

Method Blank Sample Summary

BATCH	DATE	SAMPLE	STORET	NAME	UNITS	FOUND
G18516	02/25/91	MB*NONE*1	70310*I	PH,SED	STD.UNITS	6.3
G18658	02/27/91	MB*NONE*1		PH,SED	STD.UNITS	6.3
G18659	03/04/91	MB*NONE*1		PH,SED	STD.UNITS	6.6
G18582	02/27/91	MB*NONE*1	99263 * I	TOX, SED	UG/KG-DRY	0.2
G18933	03/01/91	MB*NONE*1		TOX.SED	UG/KG-DRY	ND

Replicate Analysis Sample Summary

BATCH	DATE	SAMPLE	STORET	NAME	UNITS	REP1	REP2	RPD	MAX RPD
G18516	02/25/91	NACDLS*15	70310*I	PH,SED	SU	6.8	6.8	0.0	20
G18658	3 02/27/91	NACDLS*5		PH,SED	SU	6.9	6.9	0.0	20
G18659	03/04/91	NACDLS*1		PH, SED	SU	6.7	6.7	0.0	20
G18582	02/27/91	NACDLS*4	99263*I	TOX, SED	UG/KG	44	47	7	20

Standard Matrix Spike Recovery Summary

BATCH	DATE	SAMPLE	STORET	NAME	UNITS	%R	%R CRIT
		SP1*NONE*1	99263*I	TOX, SED	UG/KG-DRY	100	64-136
G18933	03/01/91	SP1*NONE*1		TOX, SED	UG/KG-DRY	90	64-136
		SP2*NONE*1		TOX, SED	UG/KG-DRY	92	64-136

Sample Matrix Spike Recovery Summary

BATCH	DATE		STORET	NAME	UNITS	%R	%R CRIT	UNSPIKED
G18582	02/27/91	SPM1*NACDLS*5	99263*I	TOX	UG/KG	70	64-136	23
		SPM2*NACDLS*5		TOX	UG/KG	92	64-136	23
G18933	03/01/91	SPM*NACDLS*13		TOX	UG/KG	100	64-136	62
		SPM2*NACDLS*1	3	TOX	UG/KG	75	64-136	62

DATA SUMMARIES METALS, NACDLS*1-18

COVER PAGE - INORGANIC ANALYSES DATA PACKAGE

Lab Name: ESE

Contract: NAVY

Lab Code:	Case No.:	SAS No.:	SDG.No.: NACDL
SOW No. 7/88	3		
	EPA Sample No.	Lab Sample ID	
	FD#	NALPS1*13	<u> </u>
	FD#1	NACDLS*11	
	SE1	NACDLS*14	
	SE2	NACDLS*15	
	SE3	NACDLS*16	
	SE4	NACDLS*17	
	SE5	NACDLS*18	
	SOIL	NACDLS*2	
	SO1LD	RP*NACDLS*2	
	S01U	NACDLS*1	
	SOIUS	SPM1*NACDLS*1	
	SOIUS	SPM2*NACDLS*1	
	SO2L	NACDLS*4	
	S02U	NACDLS*3	
	S03L	NACDLS*6	
	S03U	NACDLS*5	
	S04L	NACDLS*8	
	S04U	NACDLS*7	
	SO5L	NACDLS*10	
	S05U		
		NACDLS*9	
	S06L	NACDLS * 12	
•	S06U	NACDLS*13	
	SW1-T	NALPS1*1	-
Were ICP inter	relement corrections app	lied?	Yes/No Y
Were ICP back	ground corrections applic	ed?	Yes/No Y
	vere raw data generated		
	ion of background correct		Yes/No
opp			100/110
Comments:			
	· · · · · · · · · · · · · · · · · · ·		
	this data package is i		
	the contract, both tech		
	e conditions detailed abo		
	opy data package has been t's designee, as verifie		
Signature:		Name:	
Date:		Title:	

	COVER	PAGE - IN	
	30111		

		INORGANIC A	1 ANALYSIS DATA S	HE	ET	EP.	A SAMPLE NO.
Lab Name: ESE			Contract: N	IAV:	Y	! ! !	S01U
Lab Code:	i, c	ase No.:	SAS No.	:		SD	G No.:
Matrix (soil/wa	ater): SOIL			L	ab Sar	mple I	D: NACDLS*1
Level (low/med):			Di	ate R	eceive	d: 02/27/91
% Solids:	88.	5					
Cond	centration	Units (ug/I	c or mg/kg dry	we:	ight)	: MG/K	G
		1				 	
	CAS No.	Analyte	Concentration	CI	Q	M	
	7429-90-5	Aluminum		- <u> </u> -	· · · · · · · · · · · · · · · · · · ·	-¦¦	
	7440-36-0			-		-ii	
	7440-38-2					-ii	
		Barium				-ii	
		Beryllium		- -	.,	-ii	
	7440-43-9			וּטוּ		P	
		Calcium		- -		_	
	17440-47-3	Chromium					
·	17440-48-4	Cobalt		_		_	
	17440-50-8	Copper		[_	
i e e e e e e e e e e e e e e e e e e e	1 <u>7439-89-6</u>	Iron	8062.03	_		IPI	
	1 <u>7439-92-1</u>		15.54			_ <u>P</u>	
	17439-95-4			I_I		_11	
	17439-96-5			<u> </u>		_11	
	7439-97-6			ا_! <u>.</u>		_!!	
		<u>Nickel</u>		ا_'I.		_!!	
•	7440-09-7					_\\	
		Selenium		!_!.		_!!	
		Silver	·	!-!.		_!!	
		Sodium	i	!-!.		_!!	
		Thallium		!-!.		_!!	
	7440-62-2		<u> </u>	<u> </u> _		-!!	
· ·	17440-66-6			-		-¦!	
	!	Cyanide		-		-¦¦	
		·	·	'-'		-''	
Color Before:		Clari	ty Before:			Text	ure:
Color After:		Clari	ty After:			Arti	facts:
Comments:							

		INORGANIC A	1 ANALYSIS DATA S	SHEET		EPA SAMPLE NO.
Lab Name: ESE			Contract: 1	VVV	 	SOIL
Lab Code:	Ç	ase No.:	SAS No	• :		SDG No.:
Matrix (soil/w	ater): SOIL			Lab	Sample	ID: NACDLS*2
Level (low/med):			Date	Recei	ved: 02/27/91
% Solids:	87.	6				
Con	centration	Units (ug/	L or mg/kg dry	weigh	nt): MG	G/KG
			•			• ,
	CAS No.	Analyte	 Concentration	ici ç) M	i
	7429-90-5	Aluminum	1	¦-¦	— i	- <mark>!</mark>
	17440-36-0			i-i		' -
	17440-38-2		1	i-i-	—- i —	-i
	17440-39-3		<u> </u>	1-1		
	17440-41-7	Beryllium	!	ı	;	
	17440-43-9		0.33	ו 🗓 ו	l P	1
	17440-70-2		1	1 <u> </u>	1	[]
		Chromium		1 <u> </u>	;	[]
		Cobalt	1	<u> </u>	! <u></u>	1
		Copper	l	<u> _ _</u>	_	_1
	17439-89-6		4304.49		I <u>P</u>	_{
	17439-92-1	Lead		וַשַּׁוּ	! <u>P</u>	_1
	17439-95-4			!_!	!	_1
	17439-96-5			!!		_
		Mercury		!-!	!	_ !
		Nickel		!-!	<u> </u>	-!
	17440-09-7	Potassium	i	!-!	!	- !
	1 <u>7782-49-2</u> 1 <u>7440-22-4</u>	Selenium Silver		!-!		
		Sodium		!-!]	- <u> </u>
	17440-23-3			!-!	<u> </u>	- i
	17440-28-0		1	!-!	i	- i
	17440-66-6			<u> </u>		_ i
	17440-00-0	Cyanide	1	¦-¦		i -
		Cyanide		i_i	¦	- i -
Color Before:		Clari	ty Before:		Te	exture:
Color After:		Clari	ty After:		Aı	tifacts:
Comments:						

		INORGANIC A	1 ANALYSIS DAT.	A SH	EET	EPA SA	MPLE NO.
T-1- N-1 707			Contract			So)2U
Lab Name: ESE			Contract	: NA	V I		
Lab Code:	C	ase No.:	SAS	No.:		SDG No). :
Matrix (soil/wa	ater): SOIL				Lab Sa	mple ID: N	IACDLS*3
Level (low/med)) :			•	Date R	eceived: (12/27/91
% Solids:	88.	2					
Cond	centration	Units (ug/1	L or mg/kg d	ry w	eight)	: MG/KG	
		1		1			
	CAS No.	Analyte	Concentrati	onic	! Q	M !	
	7429-90-5	! Aluminum		¦-	1	-;;	
	7440-36-0			—¦-	<u>'</u>		
	7440-38-2			— i –	<u> </u>	-ii	
	7440-39-3			i-	i	-i-i	
	17440-41-7		· 	i-	i	-i-i	
	17440-43-9		0.3	8 B	1	P	-
	17440-70-2			<u> </u>	1	- i i	
	17440-47-3			i			
		Cobalt					
	17440-50-8		!		1	- ₁ ₁	
	17439-89-6		6591.8	2	1	 	
		Lead	1 11.7		1	P	
	17439-95-4					- _! _!	
	17439-96-5				·	_ <u> </u>	
	17439-97-6	Mercury	1	;	1	_ <u> _ </u>	
		Nickel		ı	1	<u> </u>	
	17440-09-7	Potassium	1		1		
	17782-49-2	Selenium	ł		1	_ _	
	17440-22-4		1		1	11	
	17440-23-5	Sodium	1		1	_	
	17440-28-0	!Thallium_	l	{	1		
	17440-62-2	Vanadium		1	1	11	
	17440-66-6	IZinc	1	1	1	_ I I	
	1	Cyanide	1	1	1	<u> </u>	
	1	l			ł	! !	
Color Before:		Clari	ty Before:			Texture	•
Color After:		Clari	ty After:			Artifac	ts:
Comments:							

	· .	INORGANIC A	1 ANALYSIS DATA	SHEET	EPA	SAMPLE NO.
Lab Name: ESE			Contract:	NAVY		S02L
Lab Code:	C	ase No.:	SAS No	.:	SDG	No.:
Matrix (soil/w	ater): SOIL			Lab S	ample ID	: NACDLS*4
Level (low/med):			Date	Received	: 02/27/91
% Solids:	82.	9				
Con	centration	Units (ug/1	L or mg/kg dry	weight): MG/KG	
	CAS No.	 Analyte	 Concentration	I I	M	
	7429-90-5 17440-36-0 17440-38-2	Antimony Arsenic				
	17440-43-9	Beryllium Cadmium	0.33		 <u>P</u>	
	7440-70-2 7440-47-3 7440-48-4 7440-50-8	Cobalt			¦¦ ¦¦	
	17439-89-6	Iron Lead	2748.56		P P	
		Mercury Nickel				
	1 <u>7782-49-2</u> 1 <u>7440-22-4</u>	Potassium Selenium Silver				
	7440-23-5 7440-28-0 7440-62-2	Thallium Vanadium			_ _	
	<u>7440-66-6</u> 	Zinc Cyanide 				
Color Before:		Clarit	ty Before:		Textu	re:
Color After:		Clarit	ty After:		Artifa	acts:
Comments:						

	INOF	GANIC ANAL	1 YSIS DATA S	SHEET	EPA SAMPLE NO.
Lab Name: ESE			Contract: N	1AVY	 S03U
Lab Code:	Case	No.:	SAS No.	· :	SDG No.:
Matrix (soil/w	ater): SOIL			Lab Sa	mple ID: NACDLS*5
Level (low/med):				eceived: 02/25/91
% Solids:	86.2				
Con	centration Unit		mg/kg dry		: MG/KG
		minum !			_ _ _
	7440-36-0 Ant 7440-38-2 Ars 7440-39-3 Bar	enic			_
	7440-41-7 Ber 7440-43-9 Cad	yllium! mium	0.34	<u> </u>	
	7440-47-3 Chr 7440-48-4 Cob				
	7440-50-8 Cor 7439-89-6 Irc 7439-92-1 Lea	<u>n </u>	4155.38		- - - <u>P</u> - P
	17439-95-4 Mac 17439-96-5 Mar	nesium ganese	73.01		- - - <u>- </u>
	7439-97-6 Mer 7440-02-0 Nic 7440-09-7 Pot	kel			
	7782-49-2 Se] 7440-22-4 Si]	enium ver			
	7440-23-5	llium !			- -
	7440-66-6 Zir				
Color Before:	i <u></u>	Clarity E	Before:	!_!	_ Texture:
Color After:		Clarity A			Artifacts:
Comments:					

		INORGANIC A	1 ANALYSIS DATA S	SHEE	e T	E	PA SAMPLE
						-	S03L
Lab Name: ESE			Contract: N	IAVY	('-	
Lab Code:	C	ase No.:	SAS No.	. :		S	DG No.:
Matrix (soil/wa	ater): SOIL			La	ıb Sa	mple	ID: NACDLS
Level (low/med):			Da	te R	eceiv	red: 02/25/
% Solids:	83.	3					
Cone	centration	Units (ug/1	or mg/kg dry	wei	lght)	: MG/	'KG
	1030 %-						
	CAS No.	: Analyte	Concentration	i C i !!	Q	M I	
	7429-90-5	Aluminum		i-i-		-;;	
	17440-36-0			- -		-i-i	
	17440-38-2			i - i -		-,	
	17440-39-3			ı	· · · · · · · · · · · · · · · · · · ·	_,,	
	17440-41-7			ı		_ ı _ ı	
	17440-43-9			បើរ		P	i
	17440-70-2			ı		- ;	
	17440-47-3					_ <u>; </u>	
	17440-48-4		1	1-1-		_,	
	17440-50-8	Copper		ı		-,	
	17439-89-6		4804.89	1_1		I P	,
	17439-92-1	Lead	5.18	ַו ַעַ ו		I P	* .
	17439-95-4	Magnesium		1_1		_	,
	17439-96-5		1	1 1		- I	
	17439-97-6	Mercury		1[1]			,
	17440-02-0		ł <u> </u>	1_1		1	
	17440-09-7	Potassium		1_1		1	
	17782-49-2	Selenium	<u> </u>	1_1		_ {	
	17440-22-4	<u>Silver</u>		_			
	17440-23-5			1_1_		_	,
	17440-28-0		l	1_1		_!	}
	17440-62-2		1	١_١_		_ !	
	7440-66-6	Zinc		١_!_		_ ' '	
	<u></u>	Cyanide		<u> _</u> _		'	
	l	. [†]	l	!_! _	<u></u>	_	
Color Before:		Clari	ty Before:			Tex	kture:
Color After:		Clari	ty After:			Art	tifacts:

1

		INURGANIC A	ANALYSIS DATA S	SHEET	_ =		
ab Name: ESE			Contract: N	VAVY	: : S04U		
ab Code:	Ca	ase No.:	SAS No.	.:	SDG No.:		
Matrix (soil/wa	ater): SOIL			Lab S	Sample	ID: NACDLS	
evel (low/med):			Date	Recei	ved: 02/27/9	
Solids:	75.8	3					
Con	centration (Jnits (ug/1	L or mg/kg dry	weight	:): MG	/KG	
]	<u> </u>	<u> </u>	1 1	<u>i</u>	1	
	ICAS No.	Analyte	Concentration	ICI Q	! M	1	
	l	l		_ <u> </u>	!	.1	
	1 <u>7429-90-5</u>			I_I	'_	1	
	17440-36-0			_ <u> </u>	!	1	
	17440-38-2		1	<u> _ </u>	!	.	
	17440-39-3		l	 _ 		1	
	1 <u>7440-41-7</u>			 _ 	!	1	
	17440-43-9	Cadmium	28.36	 _ 	<u>P</u>	1	
	17440-70-2			!_!		1	
	17440-47-3		l	_ _		1	
	17440-48-4		l	1_1		1	
	17440-50-8		1	1_1		l	
	17439-89-6		142293.29	1_1	P	1	
	1 <u>7439-92-1</u>		4144.89	1_1	P	1	
	17439-95-4	<u>Magnesium</u>	l	1_1		1	
	17439-96-5	Manganese		1_1		1	
	17439-97-6	Mercury	!	1 1		T.	
	17440-02-0	Nickel					
	17440-09-7	Potassium	!			` !	
	17782-49-2	Selenium	!			1	
	17440-22-4	Silver		1 1	;	,	
	17440-23-5			171		l .	
	17440-28-0		l	1-1	;	1	
	17440-62-2	Vanadium				•	
	17440-66-6		1	_		1	
	1	Cyanide	1	1 _ 1		1	
		1		1_1_		1	
						-	
Color Before:		Clari	ty Before:		Te	xture:	
Color After:		Clari	ty After:		Ar	tifacts:	
Comments:							
commerce.							
							

EPA SAMPLE NO.

		INORGANIC A	ANALYSIS DATA S	HEET				
Lab Name: ESE			Contract: N	IAVY	!	SO4L		
Lab Code:	Ca	ase No.:	SAS No.	:		SDG No.:		
Matrix (soil/w	ater): SOIL			Lab	Sample	ID: NACDLS		
Level (low/med):			Date	e Recei	ved: 02/27/		
% Solids:	74.8	3						
Con	centration (Jnits (ug/1	L or mg/kg dry	weigh	nt): MC	G/KG		
		<u> </u>	<u> </u>		1	-1		
	ICAS No.	Analyte	Concentration	CI (M C	!		
	7429-90-5	i ! Δ lumi num	1	- 	<u>;</u>	_ i _ !		
	7440-36-0			i-i	<u>'</u> -	- .		
	7440-38-2			i-i	i-	-		
	17440-39-3			_	I	1		
	17440-41-7	Beryllium			1	<u> </u>		
	17440-43-9		0.63		P	_1		
	17440-70-2			<u> - </u>	!_	-!		
	17440-47-3			<u> </u>		-		
	17440-48-4		i	¦−¦		_ <mark>i</mark>		
	17440-50-8 17439-89-6		12220.35	-	P	- [
		Lead	48.37	-	¦÷	-		
	17439-95-4			-	i - -	-		
	17439-96-5			i-i-		- <u>'</u>		
	17439-97-6		I			-1		
	17440-02-0	Nickel	1		l I	<u> </u>		
	17440-09-7			\ <u>_</u> _	11	_1		
	17782-49-2		!	!_!	!_	_ !		
	17440-22-4			!_!	!_	- !		
	17440-23-5		<u> </u>	!-!	!_	-!		
	17440-28-0 17440-62-2	Thailium Vanadium	•	-	¦	- :		
		Zinc	·	-	¦_	- <mark> </mark>		
	17440-00-0	Cyanide		¦-¦		- <mark>'</mark>		
		i cyaniac		i-i		-		
					·	- '		
Color Before:		Clari	ty Before:		Te	exture:		
Color After:		Clari	ty After:		A	ctifacts:		
Comments:								
<u> </u>								

		INORGANIC A	1 ANALYSIS DATA S	HEE	T	E	PA SAM	IPLE NO.
Lab Name: ESE			Contract: N	IAVY	· ·	! ! !	S05	บ
Lab Code:	C	ase No.:	SAS No.	:		s	DG No.	. :
Matrix (soil/w	vater): SOIL			La	.b Saı	mple	ID: NA	ACDLS*9
Level (low/med	1):			Da	te R	eceiv	ed: 02	2/21/91
% Solids:	92.	3						
Con	ncentration	Units (ug/]	L or mg/kg dry	wei	aht)	: MG/	KG	
	 CAS No.	 Analyte 	 Concentration 	C	Q	M		
	17429-90-5	Aluminum		_ i _		_ii		
n	17440-36-0	Antimony		<u> </u>		_11		
	17440-38-2			_ _		_'		
·	17440-39-3		!	<u> </u> _		_		
	17440-41-7			_1_		_''		
	17440-43-9		0.29	ַן עַן		_1 <u>P_</u> 1		
	17440-70-2	Calcium		<u> </u>		_		
3	17440-47-3			<u> </u>		_ _		
3	17440-48-4	Cobalt	l	_ _				
	17440-50-8		l	_ _		_11		
	17439-89-6		2879.31	_ _		_ <u>P</u>		
	17439-92-1		10.68	_ _		_ <u>P</u> _		
)	17439-95-4			_ _		_		
· · · · · · · · · · · · · · · · · · ·	17439-96-5			_ _		_!!		
	17439-97-6	Mercury		_ _		_!;		
m.	17440-02-0			_ _		_'		
	17440-09-7			!_!_		_!!		
	17782-49-2			!_!-		_!!		
· · · · · · · · · · · · · · · · · · ·	7440-22-4			!_!-		_!!		
		Sodium	i	<u> </u> _!_	-	-!!		
		!Thallium	i	<u> </u> _!-		_ <u>!</u>		
	17440-62-2			! - ! -		_ ! !		
	7440-66-6			<u> </u> _!_		_	1	
	<u> </u>	Cyanide	<u> </u>	<u> </u> -!-		_!		
	i	1	i	' ['] -		_ '		
Color Before:		Clari	ty Before:			Tex	kture:	
Color After:		Clari	ty After:	•		Art	tifact	s:
Cammanhai								

FORM I - IN

		INORGANIC	1 ANALYSIS DATA S	SHEE	T ·		EPA SAMPLE 1		
Lab Name: ESE						;	SO5L		
rap wame: rsr			Contract: 1	i.					
Lab Code:	C	ase No.:	SAS No.	.:		;	SDG No.:		
Matrix (soil/w	ater): SOIL			La	b Sar	mple	ID: NACDLS		
Level (low/med	1):			Da	te Ro	ecei	ved: 02/21/9		
Solids:	85.	6							
Con	centration	Units (ug/	L or mg/kg dry	wei	ght)	: MG	/KG		
	1	1	1				;		
	ICAS No.	Analyte	Concentration	ICI I	Q	l M			
	17429-90-5	Aluminum	1	i-i-		- i	•		
	17440-36-0			i-i-	*	-i-	1		
	17440-38-2			i-i-		-			
	17440-39-3	Barium		i-i-		- i	1		
	17440-41-7			i-i-		- i	1		
	17440-43-9			IUI		- -	1		
	17440-70-2			iři-		- i =	i		
	17440-47-3			i-i-		- i —			
	17440-48-4			i-i-		-;	i		
	17440-50-8			i-i-		-i—	:		
	7439-89-6		1934.11	i-i-		-iP	• •		
	17439-92-1			וֹטוֹ –	·····	- i - -	i.		
	17439-95-4			i = i =		- ¦ -	!		
	17439-96-5	Manganese		i-i-		- i	!		
	17439-97-6	Mercury		i-i-		-i	i		
	17440-02-0	Nickel		i-i-		-i	İ		
	17440-09-7			i-i-		- <u>i</u> —	· 		
	17782-49-2			i-i-		- <u>i</u>	i		
	17440-22-4		1	i-i-		- i —	İ		
	17440-23-5	Sodium		i-i-		- ;			
	17440-28-0	Thallium		- -		- i	1		
	17440-62-2	Vanadium		$_{1}^{-}$ $_{1}^{-}$		- ;	1		
	17440-66-6	Zinc		$_{I}^{-}_{I}^{-}$	· · · · · · · · · · · · · · · · · · ·	- i	•		
	!	Cyanide		$_{I}$		- i	1		
	1	1					l.		
olor Before:		Clari	ty Before:			Te	xture:		
olor After:		Clari	ty After:			Ar	tifacts:		
					*				
Comments:									

		INORGANIC A	1 ANALYSIS DATA S	SHEET	EPA SAMPLE N
					 FD#1
Lab Name: ESE			Contract: N	YVA	
Lab Code:	Ca	ase No.:	SAS No.	. •	SDG No.:
Matrix (soil/w	vater): SOIL			Lab Sa	ample ID: NACDLS
Level (low/med	1):			Date 1	Received: 02/27/9
% Solids:	77.	4			
Cor	centration \	Units (ug/1	L or mg/kg dry	weight): MG/KG
		1		I I	<u> </u>
	CAS No.	Analyte	Concentration	ICI Q	IM I
	7429-90-5	Aluminum		i-i	— <u> </u>
	17440-36-0				
	7440-38-2			_	!!
	17440-39-3			!_!	!!
	17440-41-7			!_!	!!
	17440-43-9		0.95	!-!	! <u>P_</u> !
	17440-70-2			!_!	!!
	17440-47-3			!-!	!!
	17440-48-4		i	!-!	
	17440-50-8		1460 41	!-!	
	17439-89-6		1468.41	!-!	$-\frac{ \mathbf{P} }{ \mathbf{P} }$
	17439-92-1		44.54	!-!	_ P
	17439-95-4 17439-96-5			<u> -</u>	
	7439-97-6		<u>'</u>	<u> </u>	- ;;
	7440-02-0		<u> </u>	i-i	 ;
	17440-09-7		<u> </u>	i-i	; ;
	17782-49-2		·	i-i	— <u>;</u> — <u>;</u>
	17440-22-4]	i-i	— i — i
	17440-23-5		·	i-i	<u> </u>
	17440-28-0			i-i	—i—i
	17440-62-2	Vanadium	1	1 1	
	17440-66-6		1	1 1	
		Cyanide	1	1 1	1 1
				!_!	
Color Before:		Clari	ty Before:		Texture:
Color After:		Clari	ty After:		Artifacts:
Comments:					

		INORGANIC A	1 ANALYSIS DATA	SHEET	. I	EPA SAMPLE NO.
Lab Name: ESE			Contract: 1	NAVY		SO6L
Lab Code:	С	ase No.:	SAS No	.:		SDG No.:
Matrix (soil/w	ater): SOII			Tah 9	amnle	ID: NACDLS*12
Level (low/med	·):			Date	Receiv	red: 02/27/91
% Solids:	82.	9			•	
Con	centration	Units (ug/	L or mg/kg dry	weight) • MC	/ v C
			or mg/kg dry	weight	. / • FIG/	NG
	ICAC No.	1 3 1				
	CAS No.	Analyte	Concentration	ICI Q	IM I	
	7429-90-5	Aluminum		i-i	-i-i	
	7440-36-0					
	17440-38-2					
	17440-39-3		1	1_1		
	17440-41-7			1_1		
	17440-43-9		0.68	l_	I P	
	17440-70-2			1_1_		•
	17440-47-3					
	17440-48-4			_	!!	
		Copper		1_1	!!	
	17439-89-6		10635.77	1_1_	! <u>P</u> _!	
		Lead	43.28	_ <u>_</u>	<u>P</u> _	
	7439-95-4	Magnesium		<u> </u>	!!	
	7439-96-5	Manganese		 _		
	17439-97-6	Mercury		_		
	7440-02-0			!-!	!	
	17440-09-7			!-!	!	
	17782-49-2			!-!		
	17440-22-4 17440-23-5	Silver		!-!	— !— !	
	17440-23-3			!-!	!!	
	17440-28-0			!-!	!!	
	17440-62-2		 	!-!	—!—!	
	17440-00-0	Cyanide		<u> -</u>	— ! — !	
		Cyanide		<u>'-</u> '	¦¦	
Color Before:		Clari	y Before:		Tex	ture:
Color After:		Clarit	y After:		Art	ifacts:
Comments:	MT Section 1					

		INORGANIC A	ANALYSIS DATA S	SHEET	EPA SAMP		
		•			 S06U		
Lab Name: ESE			Contract: N	1YAA	l		
Lab Code:	C	ase No.:	SAS No.		SDG No.:		
Matrix (soil/w	ater): SOIL			Lab Sa	mple ID: NAC	:DLS*	
Level (low/med):			Date R	eceived: 02/	27/9	
Solids:	84.	9					
Con	centration	Units (ug/	or mg/kg dry	weight)	: MG/KG		
	!	1					
	ICAS No.	Analyte	Concentration	ICI Q	M		
	7429-90-5	Aluminum		i-i	-ii		
	17440-36-0			i – i – – – – – – – – – – – – – – – – –	-ii		
	17440-38-2			i - i			
	17440-39-3			1 1	_ ₁ 1		
	17440-41-7			1 1			
	17440-43-9	Cadmium	0.60	1 1	P		
	17440-70-2	Calcium		1_1	_!!		
	17440-47-3			1_1	_ 1 1		
	17440-48-4			1_1	_1_1		
	17440-50-8			!_!	_!!		
	17439-89-6		8906.53	!-!	_! <u>P</u> _!		
	17439-92-1	Lead	56.00	!-!	_ <u> P _ </u>		
	17439-95-4			!-!	-: :		
	1 <u>7439-96-5</u> 1 <u>7439-97-6</u>			¦-¦			
	17440-02-0		!	<u>'-</u> '	- <u></u> '		
	7440-02-0			<u> </u>	-''		
	17782-49-2			i-i	-;;		
	17440-22-4			<u> -</u>	- i i		
	17440-23-5			i-i	- ii		
		Thallium	<u> </u>	i-i	-i-i		
	17440-62-2		1				
	17440-66-6	Zinc	1	1 1			
	1	Cyanide			- -		
		1	l	1_1	<u> </u>		
Color Before:		Clari	ty Before:		Texture:		
Color After:		Clari	ty After:		Artifacts	:	
Comments:							

	•	INORGANIC A	1 ANALYSIS DATA S	SHEET	EP	A SAMPLE NO
Lab Name: ESE			Contract: N			SE1
					•	
Lab Code:	Ca	ase No.:	SAS No.	:	SD	G No.:
Matrix (soil/w	vater): SOIL			Lab Sa	imple I	D: NACDLS*1
Level (low/med	1):			Date F	Receive	d: 02/21/91
% Solids:	83.9	9				
Cor	centration (Jnits (ug/I	or mg/kg dry	weight): MG/K	G
	CAS No.	 Analyte	 Concentration	C Q	M	
	7429-90-5	Aluminum				
	17440-36-0				=!=!	
	17440-38-2 $17440-39-3$		·			
	7440-41-7			- <u> </u>	-¦¦	
	17440-43-9		0.65	i - i	P	
	17440-70-2			<u> </u>		٠
	7440-47-3			<u> </u>	_ _	
	17440-48-4			<u> </u> _	_!!	
	17440-50-8 17439-89-6		6931.25	¦- <u></u> ¦	- -	
	7439-92-1		19.70	- 		
	17439-95-4			i-i	- i - i .	
	17439-96-5	Manganese				
	17439-97-6					
	7440-02-0			-	_!_!	
	17440-09-7 17782-49-2			¦-¦	—¦—¦	
	17440-22-4			<u> </u>	— <u>¦ —</u> ¦	
	7440-23-5			i - i	-i-i	
	17440-28-0			-		
		<u>Vanadium</u>				
	7440-66-6				II	
		<u>Cyanide</u> 		- <u></u>		
Color Before:		Clari	ty Before:		Text	ure:
Color After:		Clarii	ty After:		Arti	facts:
Comments:						

FORM I - IN

		<u>.</u>	INORGANIC A	1 ANALYSIS DATA S	SHEI	ET	EPA	SAMPLE NO.
Lab Na	me: ESE			Contract: 1	VAV	Ž		SE2
Lab Co		C	ase No.:	SAS No			SDG	No.:
202 00			200 21011				000	2.00,0
Matrix	: (soil/w	ater): SOIL			La	ab Sai	mple ID:	: NACDLS*15
Level	(low/med):			Da	ate R	eceived	02/21/91
% Soli	ds:	32.	5					
	Con	centration	Units (ug/	L or mg/kg dry	we:	ight)	: MG/KG	
		1		1			· · · · · · · · · · · · · · · · · · ·	*
		CAS No.	 Analyte	Concentration	C	Q	M	
		7429-90-5	Aluminum		i-i-		-ii	
		17440-36-0			₁ -1-		-1-1	
		17440-38-2					_	
		17440-39-3	Barium	\	1 [1		_11	
		17440-41-7	Beryllium		1[1]		_	
		17440-43-9		1.40	1_1		<u> P </u>	
			Calcium	l	I_I		_ _	
		17440-47-3			1_1		_' '	
		17440-48-4		1	1_1		_11	
				1	_ _		_!!	
		17439-89-6		56860.55	!_!-		_ <u> P</u>	
		17439-92-1		21.18	!_!.		_! <u>P_</u> !	
		17439-95-4			!-!-		_!!	
		17439-96-5			!-!-		_!!	
		17439-97-6		i	<u> </u>		_!!	
				i	<u> </u>	<u> </u>	-!!	
		17440-09-7		i	¦ ¦-		- <u> </u>	
			Selenium Silver	1	¦¦-		-	
		17440-23-5		1	¦¦-		-::	
		17440-23-3	Thallium		<u> - -</u>		-;;	
		17440-28-0	Vanadium		;-;-		-;;	
			Zinc		i-i-		-ii	
		1	Cyanide	<u> </u>	i-i-		- i i	
					<u></u>			
Color	Before:		Clari	ty Before:			Textu	re:
Color	After:		Clari	ty After:			Artif	acts:
Commer	nts:							
			 		· · · · ·			

		INORGANIC A	1 ANALYSIS DATA S	SHEET	EPA SAMPLE NO
Lab Name: ESE	1		Contract: N	1AVY	SE3
Lab Code:	C	ase No.:	SAS No.	. :	SDG No.:
Matrix (soil/w	ater): SOII.			Tah San	nple ID: NACDLS*
				Lub buil	.prc 15. Micbib.
Level (low/med):			Date Re	eceived: 02/21/9
Solids:	23.	5			
Con	contration	Unita (ua/1	L or mg/kg dry		NC /VC
COM	centration	units (ug/)	L OI MG/KG GTY	weight/:	MG/KG
	1	1			
	ICAS No.	! Analyte	Concentration	C! Q	I M · I
	1 17429-90-5	i Niminum	i	└ ─ ├──	-
	17440-36-0		!	¦	-
	17440-38-2		· · · · · · · · · · · · · · · · · · ·	¦-¦	- '
	7440-39-3			-	
	17440-41-7				-
	17440-43-9		3.03		IP I
	17440-70-2				1
	17440-47-3	Chromium	1		11
	17440-48-4				[1 <u></u> 1
	17440-50-8			<u>_</u> <u></u>	11
	17439-89-6		93724.65	<u> </u>	<u> P </u>
		Lead	26.73	<u> </u>	<u> P </u>
	17439-95-4			¦ — ! ———	- ·
	1 <u>7439-96-5</u> 1 <u>7439-97-6</u>		i	<u> - </u>	- ·
	17440-02-0		!	¦ 	- ¦ `
	7440-09-7			¦ — ; ———	-
	17782-49-2			- 	
		Silver		i – i – – – – – – – – – – – – – – – – –	-
	17440-23-5		1	i - i	-i-i
	17440-28-0	Thallium			
	17440-62-2				<u> </u>
	17440-66-6	Zinc		_ <u> </u>	_
		<u>Cyanide</u>		_ <u> </u>	
	i			'_ '	_!!
Color Before:		Clari	ty Before:		Texture:
Color After:		Clari	ty After:		Artifacts:
Comments:					

						SE4
Lab Name: ESE			Contract: 1	VAV	Y	1
Lab Code:	C	ase No.:	SAS No	• •		SDG No.:
Matrix (soil/w	ater): SOIL			Li	ab Sa	mple ID: NACDLS
revel (low/med	():					eceived: 02/21/
Solids:	76.	2				
Con	centration	Units (ua/1	L or mg/kg dry	wo	iah+)	· MC/KC
	.ceneración	011103 (ug).	b or mg/kg dry	# C.	rgiici	- MG/ KG
	1	l	-	1 1		<u> </u>
	CAS No.	Analyte	Concentration	ICI	Q	IM I
	17420 00 5	13.7		!_!-		_!!
	17429-90-5			!!-		_
	1 <u>7440-36-0</u> 1 <u>7440-38-2</u>		i	<u> </u> - -		
	17440-38-2		! !	¦-¦-		-::
	17440-41-7			<u></u> '-:-		
	17440-43-9		0.45	'등'-		-¦ - -;
	17440-70-2		! 0.45	¦윤¦-		_ <u> P </u>
	17440-47-3		!	¦-¦-	<u>:</u>	
	7440-48-4		 	¦-¦-	·	! <u>:</u>
	17440-50-8		<u>'</u>	¦¦-		—¦——¦,
		Iron	4856.66	<u> -</u> -	· - · ·	-(
		Lead	18.73	<u> </u> -		$-\frac{P}{P}$
		Magnesium		<u> -</u> -		_ <u> P </u>
	7439-96-5			;-:-		-
	17439-97-6	Mercury		¦-¦-		
	17440-02-0	Nickel		¦-¦-	····	-
	17440-09-7	Potassium		<u> -</u> -		- -
		Selenium		<u> </u>		-::
	17440-22-4			i-¦-		- -
	17440-23-5			i-;-		
	17440-28-0	Thallium		- i -		-ii
	17440-62-2	Vanadium		i-i-		-;;
	17440-66-6	Zinc		- 1		-
	1	Cyanide		- i -		— <u>i — i</u>
		1		i-i-		-i-i
olor Before:		Clarit	ty Before:			Texture:
olor After:		Clarit	ty After:			Artifacts:
omments:		•	=			

Level (low/me % Solids:	Candidate Candid	Units (ug/) Analyte Aluminum	Contract: SAS No	La Da	ab Sa ate R ight)	mple eceiv	SE5 DG No.: ID: NACDLS* red: 02/21/9
Lab Code: Matrix (soil, Level (low/me % Solids:	Candidate No.	Units (ug/) Analyte Aluminum	SAS No	La Da	ab Sa ate R ight)	mple eceiv : MG/	ID: NACDLS'
Matrix (soil/ Level (low/me % Solids:	/water): SOIL ed): 83. concentration CAS No. 7429-90-5 7440-36-0 7440-38-2	Units (ug/) Analyte Aluminum	L or mg/kg dry	La Da v we:	ate R	mple eceiv : MG/	ID: NACDLS'
Level (low/me	83. concentration CAS No. 7429-90-5 7440-36-0 7440-38-2	Units (ug/) Analyte Aluminum		Da v we:	ate R	eceiv : MG/	red: 02/21/9
Solids:	83. Concentration CAS No.	Units (ug/I		7 we:	ight)	: MG/	
	CAS No.	Units (ug/I		1 1			′KG
Co	CAS No. 17429-90-5 17440-36-0 17440-38-2	Analyte Aluminum Antimony		1 1			'KG
	17429-90-5 17440-36-0 17440-38-2	 Aluminum Antimony	 Concentration 	 C _ _ .	Q	I M	
	17429-90-5 17440-36-0 17440-38-2	 Aluminum Antimony	Concentration 	1 C - _ .	Q	M	
	1 <u>7440-36-0</u> 1 <u>7440-38-2</u>	Antimony		- ; ; -			la la la la la la la la la la la la la l
	1 <u>7440-36-0</u> 1 <u>7440-38-2</u>	Antimony	i	i i		- i i	
	17440-38-2		i '	- - -		-ii	
		larsenic	l	-1-1-		_ _	*
				- ₁ ₁ -		11	•
	17440-41-7		1	7171		_	
	17440-43-9		4.94	-,-,-		- P	i .
	17440-70-2			-;;-		- ı — ı	
	17440-47-3		1	1 1		_ ; ;	·
	17440-48-4			- I - I		_ <u> </u>	
	17440-50-8	Copper		- I - I		_ ı ı	!
	17439-89-6	Iron	15627.62	<u> </u>		P	
	17439-92-1	Lead	145.23	[1]1		IP I	
	17439-95-4	Magnesium	1	[[_[_;_;	
	1 <u>7439-96-5</u>			_1_1			•
	17439-97-6		1	_1_1.		_ 1 1	l
	17440-02-0		1	_ _		_ ! !	1
	17440-09-7		!	_!_!.		_	
	17782-49-2		1	<u>_</u> 11,		_1	
	17440-22-4		1	_!_!.		_ ' '	•
	17440-23-5		ł	_!_!.		_ ! !	
	17440-28-0		1	_!_!.		_ !	
		Vanadium	!	_1_1.		_ '	!
	17440-66-6		ł	_!_!.		_ '	
		Cyanide		_!_!.		_ !	ļ
	1	·		_		_!	
Color Before	:	Clari	ty Before:			Tex	xture:
Color After:		Clari	ty After:			Art	tifacts:
Comments:							

2A INITIAL AND CONTINUING CALIBRATION VERIFICATION

Contract: NAVY

Lab Code: ICV,CCV Case No.: SAS No.: SDG.No.:

Initial Calibration Source:

Continuing Calibration Source:

Concentration Units: UG/L

1 1	Initia	l Calibra	tion :		Continuir	ng Cali	bration	; ;	1
Analyte	True	Found	%R(1)!	True	Found	%R(1)	Found	%R(1)!	! M
Aluminum			i						i
Antimony	1000.01	974.73	97.5	500.01	509.50	101.9	509.00	101.8	¦P
Arsenic	50.01	54.00	108.0	50.0	49.70	99.4	50.60	101.2	F
Barium						1			;
Beryllium	1000.01	994.46	99.4	500.0	512.17	102.4	512.17	102.4	IP
Cadmium	1000.01	970.81	97.1	500.01				101.8	I P
Calcium						1			1
Chromium	1000.01	993.57	99.4	500.0	500.30	100.1	505.66	101.1	IP
Cobalt		'				!	,		1
Copper	1000.01	986.83	98.7	500.0	513.30	102.7	507.51	101.5	IP
Iron	1000.01	1029.43	102.9	5000.0	5150.00	103.0	5155.21	103.1	! P
Lead	1000.0	971.50	97.21	500.0	493.00	98.6	486.20	97.2	IP
Magnesium	1								· -
Manganese		-		1	-	1	-		-
Mercury	5.0	4.98	99.6	5.0	5.07	101.4	4.89	97.8	CV
Nickel	1000.01	986.51							
Potassium!	1					ı ———			1
Selenium	124.01	129.00	104.0	50.01	49.30	98.6	48.70	97.4	1 F
Silver	1000.01	1024.65	102.5	500.0	516.00	103.2	519.96	104.0	P
Sodium	1					!			1
Thallium	1000.01	988.22	98.8	700.0	696.80	99.5	694.66	99.2	IP
Vanadium									
Zinc	1000.01	975.91	97.6	500.0	504.40	1100.9	502.90	100.6	I P
Cyanide			1			,			1
1	\{								!

⁽¹⁾ Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: ESE

Contract: NAVY

Lab Code: ICV,CCV Case No.:

SAS No.:

SDG.No.:

Initial Calibration Source:

Continuing Calibration Source:

Concentration Units: UG/L

	Tniti	al Calibr	ation ¦		Continuir	ng Cali	bration	1	
Analyte	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)!	M
Aluminum		1						· · · · · · · · · · · · · · · · · · ·	<u>i</u>
Antimony !		1		500.0	518.15	103.6	500.77	100.21	I P
Arsenic		1	11	50.01	52.80	105.6	49.90	99.8	ł F
Barium		1	1 1	1					1
Beryllium		1	1 1	500.0	508.73	101.7	491.53	98.31	1P
Cadmium !		1	1	500.01	504.72	100.9	489.21		
Calcium !		1	1 1						1
Chromium !		1	1 :	500.01	502.84	100.61	485.86	97.21	1P
Cobalt !		1	1 1						1
Copper !		1	۱ ۱	500.0!	511.78	102.4	477.74	95.51	!P
Iron		1	1	5000.01	5087.51	101.81	4871.21	97.4	1P
Lead !			! !	500.01	518.60			98.01	! P
Magnesium		1	1						
Manganese		1	1					l l	
Mercury		1	1	10.0	9.33	93.3			ICV
Nickel		•	1 1	500.01				95.61	
Potassium!		1		1	***************************************				1
Selenium			·	50.01	48.80	97.6	49.90	99.81	F
Silver		1		500.01					
Sodium		1						1	1
Thallium :		1		700.01	699.31	99.9	712.49	101.8	P
Vanadium		1	1					i i	1=-
Zinc		1	1	500.0	513.17	102.6	485.50	97.1	P
Cyanide		1	·			1	100.00	; ;	;=
1		<u> </u>	· '			<u> </u>		¦'	<u>;</u>
		·		' <u> '</u> '		·	·	· '	'

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

2A INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: ESE

Contract: NAVY

Lab Code: ICV,CCV Case No.:

SAS No.:

SDG.No.:

Initial Calibration Source:

Continuing Calibration Source:

Concentration Units: UG/L

		· · · · · · · · · · · · · · · · · · ·						1	ī
1	Initia	al Calibr	ation		Continuir	ng Cali	bration		1
Analyte	True	Found	%R(1)		Found	%R(1)	Found	%R(1)!	! M
	-		1					-	•
Aluminum			· :						1
Antimony				500.01	506.42	101.3	511.08	102.21	1P
Arsenic			1	50.0	49.10	98.21		l I	F
Barium			1 3	1					1
Beryllium			11	500.01	508.74	101.71	507.59	101.5	·I P
Cadmium			·	500.01	507.16	101.4	506.72	101.3	P
Calcium			1 1			!!		<u> </u>	1
Chromium			_	500.01	501.51	1 <u>100.3</u> 1	500.01	100.0	I P
Cobalt	1	1		1		1 <u> </u>			1
Copper	1		1 1	500.0	497.56	1 99.5	496.64	99.3	P
Iron	ł			5000.01	5066.12	1101.3	5061.44	101.2	P
Lead	1			500.0	516.95	103.4	499.93	100.0	IP
Magnesium	!					I 1		l	\Box
Manganese	1		11	l I		۱ <u> </u>		l !	<u> </u>
Mercury		1	1 1	l <u> </u>		!	."		1
Nickel	l	l		500 <u>.0</u> 1	493.75	98.8	501.55	100.3	IP.
Potassium	1	1	_			!!			
Selenium	l	1	!!	50.0		1 97.2		l	IF
Silver	1	ł	_ ! !	500.0	517.90	103.6	518.11	103.6	I P
Sodium	ł		_ ! !	l!		11		1	H
Thallium	l <u></u>	l	_ I I	700.0	679.31	97.0	683.54	97.6	l I P
Vanadium	1	l	_11	!!				{	
Zinc	1	1	_	<u>500.0</u>	498.14	99.6	502.51	100.5	I I P
Cyanide	1	l	_	l1		l		!	
1	1	ł	<u> </u>	l !				}	! !

⁽¹⁾ Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

2A INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: ESE

Contract: NAVY

Lab Code:

Case No.:

SAS No.:

SDG.No.:

Initial Calibration Source:

Continuing Calibration Source:

Concentration Units: UG/L

i	+	1 0-141 ··	, , , , , , , , , , , , , , , , , , , ,		C+ 4	C-14	hand to an		1
Analyte !	Initia True	l Calibra Found	ation ; R(1)		Continui: Found	%R(1)		%R(1)!	i M
 						!!		,¦	
Antimony	,			1		11		!!	1
Arsenic			1 1			11		!!	1_
Barium			1 1			اا		۱ <u></u> ۱	1
Beryllium!			!!	!	-	اا		۱ <u> </u>	1
Cadmium	1000.0	964.00	1 96.4 I	500.0	498.00	1 <u>99.6</u>	476.00	1 <u>95.2</u> 1	I <u>P</u>
Calcium	!		11	1		۱ <u> </u>		<u> </u>	!
Chromium !	<u> </u>		!!			!!		!!	!
Cobalt !	<u> </u>		11	1		!!		<u> </u>	_
Copper	<u> </u>	-	!!			!!			!
Iron	1000.0	1013.00							! <u>P</u>
Lead !	1000.0	976.00	97.6	500.0	467.00	93.4	460.00	92.0	<u> P</u>
Magnesium:		· · · · · · · · · · · · · · · · · · ·	!!			!!		!!	.! <u> —</u>
<u>Manganese</u>			!!			<u> </u>		!!	. ! —
Mercury			!!			İ		!!	∷!—
Nickel	!		!!			<u> </u>		!!	: ! <u> —</u>
Potassium	<u> </u>	· · · · · · · · · · · · · · · · · · ·	<u>:</u> :			<u> </u>		<u> </u>	: !—
Selenium !	i		<u>;</u> ;			!		!——!	. i—
Silver !	i		<u> </u>	<u> </u>		!	·	<u> </u> i	: <u> </u>
Sodium !	i		!!	· •		<u>'</u>	<u> </u>	<u> </u>	i i
Vanadium :	<u> </u>		!!	¦	•	!	1	::	::
Zinc	·		¦;		<u> </u>	!	· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·	: !—
Cyanide	·		<u> </u>	· · · · · · · · · · · · · · · · · · ·		<u> </u>		; 	
CYAIITUE	· · · · · · · · · · · · · · · · · · ·		<u>'</u> '	·		<u> </u>	<u> </u>	!!	:

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

3 BLANKS

Lab Name: ESE

Contract: NAVY

Lab Code: ICB, CCB

Case No.:

SAS No.:

SDG.No.:

Preparation Blank Matrix (soil/water): SOIL

Preparation Blank Concentration Units (ug/L or mg/kg): MG/KG

		1							1 1		i	ŀ
1 1	Initial	ŀ						. !			1	1
1	Calib.	. 1	Conti	nu	ing Calib	ora	ation		1	Prepa-	1	{* -
1	Blank	1		Bl	ank (ug/I	(ر			1	ration	- 1	1
Analyte	(ug/L)	CI	1	С	2	С	3	C	!!	Blank	CI	1 M
1 1 1		- 1							! !		1	1
Aluminum		_ I		_ !				_	! !			1
Antimony	40.0	Ū:	40.0	Ū١	40.0	Ū	40.0	Ū	1 1	4.00	וּטוּ	I P
Arsenic	2.61	Ū:	2.61	Ū	2.6	١Ū١	2.6	Ū	1	0.260	ŪΙ	F
Barium		- 1		_ ;				-	! !	*	-	1
Beryllium	1.31	Ū١	1.3	Ū I	1.3	ו 😈	1.3	Ū	1.1	0.130	ŪI	¦ P
Cadmium	3.01	ŪΙ	3.0	Ū:	3.0	Ū	3.0	Ū	11	0.300	ιŪΙ	1 P
Calcium	1	_		_ !				_	1 1			1
Chromium	5.71	ŪΙ	5.7	Ū:	5.7	Ū	5.7	Ū	1	0.570	ΙŪΙ	I P
Cobalt	1	- ;	1	_ 1		-		!-			ı ⁻ ı	1
Copper	5.81	Ū١	5.8			B	5.8	Ū		0.580	١Ū١	IP
Iron	12.01	ŪΙ	12.0	Ū:	14.8	B	12.0	Ū		1.20	ŪI	l P
Lead	47.01	_	47.0			Ū	47.0	Ū		4.70	Ū	l P
Magnesium	1	_ l				ı _	1					1
Manganese		_ ;		_		ı		-	1 1		ı — ı	1
Mercury	1	_	0.2	Ū I	0.2	ប			1 1	0.020	Ū	ICV
Nickel	14.01	ŪΙ	14.0	Ū	14.0	! U	14.0	ΙŪ	1	1.40	បើរ	IP
Potassium		- ;		_ {		۱ –					-	1
Selenium	2.1	ŪΙ	2.1	ប៊	2.1	ΙŪ	2.1	ιŪ	! !	0.210	١Ū١	F
Silver	4.91		4.9	Ū	8.0	ΙĒ	4.9	Ū	1 1			1P
Sodium		- 1		_ 1		-	1	<u> </u>			۱ - ۱	
Thallium	176.01	Ū١	176.0	Ū i	176.0	Ū	176.0	ΙŪ	1 1	17.6	וּטּוּ	I P
Vanadium	1	_		_ {	:	۱_	1.	! —	1 1		ı-,	.
Zinc	5.6	Ū١	5.6	Ū	9.4	ΙB	5.6	ΙŪ	1 1	0.560	١Ū١	I P
Cyanide	 	₹;		- 1		_		_		· · · · · · · · · · · · · · · · · · ·	-	1
		_ ;	1	- 1		!		! -			ı-ı	1

3 BLANKS

Lab Name: ESE

Contract: NAVY

Lab Code: ICB, CCB

Case No.:

SAS No.:

SDG.No.:

Preparation Blank Matrix (soil/water): SOIL

Preparation Blank Concentration Units (ug/L or mg/kg): MG/KG

											
1							1			.1	
1	Initial						;	ŀ			!
1	Calib.			ing Calib		tion	. ;		Prepa-	1	!
1	Blank		Bl	ank (ug/I	,)		• [ration	1	ì
Analyte	(ug/L) C	1 1	C.	2	С	3	CI	1	Blank	CI	! M
ll							!	۱_	J.	_	!
Aluminum		l	_!		_ 1		_1_1	۱_		1_1	!
Antimony	· l	40.0		40.0			_!_!	<u> </u>	4.00		
Arsenic		l2.6	UI	2.6	<u>U</u> !		_ _	١		1_1	<u>F</u>
Barium	_ _ 	ll	_		_ !		_!_!	١_		1_1	!
Beryllium		1.3		1.3			_ _	!_	0.130		
Cadmium	I	1 <u>3.0</u> 1	<u>U</u> !	3.0	<u>U</u> !		_1_1	1_	0.300	וַעַו	! <u>P</u>
Calcium	1	l1	_ !		_!		_1_1	١_		1_1	l
Chromium	<u> </u>	5.7	<u>U</u> !	5.7	<u>U</u> !		_ _	1_	0.570	1 <u>U</u> 1	P
Cobalt		l	_ 1		_ :		_1_1	1		1_1	1
Copper	l	5.8		5.8			_ _	!_	0.580		
Iron		12.0		12.0			_	!	1.20		
Lead	l	47.0	<u>U</u> I	47.0	<u>U</u> :		_1_1	1_	4.70	IUI	1 <u>P</u>
Magnesium		!1	_		_		[1]1	1		1_1.	l
Manganese	l <u> </u>	l	_ 1		_ 1		_1_1	1		1 1	l
Mercury_	l l	l	_ !			4	_ _	!		1_1	!
!Nickel !	l!	14.0	U!	14.0	U		_ _	!_	1.40	101	P
Potassium		1 1	$\begin{bmatrix} -1 \\ 1 \end{bmatrix}$				-1-1	1		1 1	1
Selenium		l 2.1	₫!	2.1	Ū		_ _	!		1 1	F
Silver	1	4.9	Ū:	4.9	Ū		-,-,	1	0.490	ΙŪΙ	1 P
Sodium		1 ;	1		_	1	-1-1	1		1-1	1
Thallium	I	176.0	<u>U</u> :	176.0	Ū	}	- -	!	17.6	וּטוּ	! P
Vanadium	1	1	- :		-			1		1 1	1
Zinc	1	5.61	Ū	5.6	Ū		_ _	1	0.560	101	l P
Cyanide		1	- 1		-	1	-1-1	1		1-1	1
1		ļ	- 1		-	!	- -	\		1-1	1

3 BLANKS

Lab Name: ESE

Contract: NAVY

Lab Code:

Case No.:

SAS No.:

SDG.No.:

Preparation Blank Matrix (soil/water): SOIL

Preparation Blank Concentration Units (ug/L or mg/kg): MG/KG

1		ł						1		1	1
1	Initial	!						1	! .	1	1
1	Calib.	1	Conti	.nı	ing Calibr	ca	tion	1	Prepa-	1	1
1	Blank	- 1			lank (ug/L)			1	-	1	1
Analyte	(ug/L)	CI	1	С	2 (3	CI		C!	! M
1 1	, , , , , , , , , , , , , , , , , , ,	- 1						i	!	1	:
Aluminum		- 1		_		- 1		-:	1	1-1	!
Antimony		- ;		_		- 1		-!	1	1-1	1
Arsenic		-1		_		- 1		-1	!	\mathbf{I}^{-1}	!
Barium		- 1		-		- 1		-!	\$	$I_{-}^{-}I_{-}$	1
Beryllium	1	_;		- ;	1	- !		- 1	f	1-1	1
Cadmium	3.0	ŪΙ	3.0	Ū	1	- 1		_ {	!	1-1	! P
Calcium	1	- 1	1	- 1	1	٦,		_!	1	1-1	1 .
Chromium		_!		-	!	- ;		- ;		1-1	1
Cobalt		- I			ll _	_		_ i	1	1-1	1
Copper		_ 1		-		_		<u> </u>	1	1-1	1
Iron	12.0		12.0	֓֞֞֞֞֞֞֓֓֓֓֞֞֞֞֞֩֞֞֩֞֞֩֞֡	1	<u> </u>		_ 1	1	1-1	P
Lead	47.0	<u> </u>	47.0	<u>U</u>	ll	_		_	1	1_1	l P
Magnesium		_			<u> </u>	_ {		_ ;	!	1_1	!
Manganese		_ 1			ll	_		_	1	4 🗀 1	f
Mercury		_ 1		_	l l _	_		1	1	1 1	1
Nickel		_			ll	_ :		_1	1	1_1	1
Potassium	<u> </u>	_ 1			ll_	_		_	1	1_1	ł
Selenium		<u> </u>		<u> </u>	lI	_		<u> </u>	1	$I \subseteq I$!
Silver		_ 1		_	l <u></u> l_	_		<u> </u>	1	1 - 1	1
Sodium				-	l l	<u> </u>		<u> </u>	1		!
Thallium		_1			l l _	_ {			f	1_1	1
Vanadium		_		_		_ ;		1_1	1	1 - 1	!
Zinc !		_	-	_	l'	_		<u> </u>	1	1_1	
Cyanide		<u> </u>			l l _	_		<u> </u>	1	1_1	
1		1		_	!	-			1	1-1	1

ICP INTERFERENCE CHECK SAMPLE

Lab Name: ESE

Contract: NAVY

Lab Code: ICS

Case No.:

SAS No.: SDG.No.:

ICP ID Number: JA1100CLP

ICS Source:

Concentration Units: UG/L

				···				
1	 ! • • • • • • • • • • • • • • • • • • •	ue !	Tni	tial Found	} 		Final Found	i []
, ,	Sol.		Sol.	Sol.		Sol.	Sol.	·
Analyte	A	AB	301. A	AB	%R ¦	Α	AB	%R
, Wildlace		ו עמ	A	ממ	1			910
Aluminum	<u> </u>		 ,		;			
	!!	1000		979.0	97.9		997.5	99.8
Antimony	·	1000		9/9.0	91.9		1 397.3	77.0
Arsenic		i					·	
Barium		!		<u> </u>	100 0			100 4
Beryllium		500			102.2			102.4
Cadmium_	l	1000		977.7	97.8		985.7	98.6
Calcium	l	;		l i			1	
Chromium	<u> </u>	1000!		990.6	<u>99.1</u>		1007.4	100.7
Cobalt				l			1	
Copper		5001	!	491.7	98.3		1 485.4	
Iron		200001	-	19443.91	97.21		1 19299.6	96.5
Lead		50001		4792.91	95.91		1 4849.3	97.0
Magnesium							1	
Manganese		ı—— ı					1	
Mercury	\						1	
Nickel	1	1000	-	937.2	93.7		950.7	95.1
Potassium							1	
Selenium	1						1	
Silver	!	500	·	494.1	98.8		505.5	101.1
Sodium				·	-3000			
Thallium	<u> </u>	1000	,	982.6	98.3		947.4	94.7
Vanadium	<u> </u>			1	<u> </u>		i	·
Zinc	' 	1000		973 5	97.4		977 2	97.7
12110	<u>'</u>	: :		1 3/3.3	- - 21 • 4 (ļ 	1 311.2	91 • 1
i	'	i i	· · · · · · · · · · · · · · · · · · ·	! <u></u>	ا <u>ــــــــ</u> ا	' <u> </u>	1	·

ICP INTERFERENCE CHECK SAMPLE

Lab Name: ESE

Contract: NAVY

Lab Code:

Case No.: SAS No.:

SDG.No.:

ICP ID Number: JA1100CLP

ICS Source:

Concentration Units: UG/L

1	Тз	rue l	Ini	itial Found		I	Final Found	
1	Sol.	Sol. :	Sol.	Sol.		Sol.	Sol.	
Analyte	A	AB I	Α	AB	%R	A		%R
1 1		1			•			1
Aluminum				1		N		
Antimony			1	1				
Arsenic		ı —— ı					1	
Barium				l			l	
Beryllium		!					1	1
Cadmium		1000	-	968.01	96.8		956.01	95.6
Calcium		!		l				
Chromium								
Cobalt		!!						
Copper						-	1	
Iron !		20000		19546.01			19470.01	97.4
Lead		5000	1	4668.01	93.4		4646.01	92.9
Magnesium		l ;		l l			1	
Manganese		l		l <u></u>			1.	
Mercury		{					1	
Nickel		1 1					l	
! Potassium !		1		l				
Selenium		ł :					1	
Silver		{ {						
Sodium		l					1	
Thallium		ł <u> </u>		<u> </u>		l	l ⁻ (
Vanadium		! !					1	
Zinc		l :					1	
1		1 :					1	
		· · · · · · · · · · · · · · · · · · ·		· · · · · · · · · · · · · · · · · · ·				

5A SPIKE SAMPLE RECOVERY

EPA SAMPLE NO.

Lab Name: ESE

Contract: NAVY

SOIUS

NACOLSX

Lab Code: SPM1

Case No.:

SAS No.:

SDG.No.:

Matrix (soil/water): SOIL

Level (low/med):

% Solids for Sample: 88.5

Concentration Units (ug/L or mg/kg dry weight): MG/KG

			1	- 1			1	!
•	Control		1	ł			i	1 1
	Limit	Spiked Sample	Sample	_	Spike !	0	1	i
! Analyte	¦ %R	Result (SSR) (C! Result (SR)	C	Added (SA)	%R	ĮQ.	l Mi
: :Aluminum	i. !		. !	_			<u> </u>	<u>'</u> '
Antimony	!			-;			<u>i</u> -	P
Arsenic	<u> </u>		·	-	······		<u> </u>	i - i
Barium	<u> </u>		·	i – i			<u>-</u>	ì — i
Beryllium	;			<u> </u>			1-	P
Cadmium	75-125	5.0131	0.3039	וּטוּ	5.06	99.1	1	P
Calcium	1		1	۱-۱			!_	1-1
Chromium	1			ı – ı			!	P
Cobalt	ŧ						1	!!
Copper	E	1		۱ ٔ ۱		1	1	!P
Iron		7840.7068	1 8062.0265	1_1	101.29		1_	1 P
Lead	1 75-125	51.6208	1 15.5430	ا_ا	50.65	71.2	! N	P_
Magnesium			_	ا _ ا			1_	1
Manganese	1	lll_		_			1_	! !
Mercury	!	lt_	_ {:	ا_ا			1_	1
Nickel	1	1	1	ا_ا		l	1_	P
Potassium	1	ll_	_	I_ I		l	1_	!
Selenium	l	ll_	1	ا_ا	<u> </u>		!_	<u> </u>
Silver	!	!!_		_			!_	<u> P</u>
Sodium	!	<u> </u>	_ [<u> </u> _		!	!_	!
Thallium	!]		!_!	· · · · · · · · · · · · · · · · · · ·	<u> </u>	!-	! <u>P</u>
Vanadium			_ [!-!		i	!-	!
Zinc	<u> </u>	!!	_ [!_!		·	.ļ_	<u>P</u>
Cyanide		ļ	_ ! !	<u>!_</u> !		!	.¦	!—
1	1	[_ !	1_1		i	۱_	i

Comments:			
· · · · · · · · · · · · · · · · · · ·	 		

5A SPIKE SAMPLE RECOVERY

EPA SAMPLE NO.

Lab Name: ESE

Contract: NAVY

SOIUS MS/D

NACD LS */
SDG.No.:

Lab Code: SPM2

Case No.:

SAS No.:

Matrix (soil/water): SOIL

Level (low/med):

% Solids for Sample: 88.5

Concentration Units (ug/L or mg/kg dry weight): MG/KG

			 -				,	1 1	
i	i 		i		1		-		: 1 : 1
i i	Control		i	Camm 1 a	i	Condition		1 (: . !
i i	Limit	Spiked Sample	i Ci	Sample	ا د د	Spike (CA)	i ¦ %R	101	. M.
! Analyte	%R	Result (SSR) (Cļ	Result (SR)	C	Added (SA)	i ok	ĮQ!	M
		·	_!		_ <u> </u>			!-!	<u> </u>
Aluminum			_ '		_ !	·		!!	!
Antimony			_!		_ !			!-!	<u>P</u> !
Arsenic		<u> </u>	_;		_ !			!-!	!
Barium		ll_	_ 1	<u> </u>	_			1_1	
Beryllium			_		_	· .		1_1	<u>P</u>
Cadmium	1 <u>75-125</u>	5.3795	_ !	0.3217	ושו	5.36	100.4	I _	<u>P</u>
Calcium	l	l l .	_ 1		_ !		l	1_	
Chromium	l	ll	_ {		_ 1		l	1_1	P !
Cobalt	!	ll	_ {		_		1	!!	
Copper	1	1	_ !		_			1	P
Iron	!	8243.37431	_	8062.0265		107.25		1	$ \overline{P} $
Lead	75-125	55.62851	_	15.5430		53.62	74.8	l N	P
Magnesium	!	1	- 1		T		1	!	!
Manganese			1				!	!	
Mercury	I .		- ;				!	1	1
Nickel	ļ		_;		۱-۱		!	ı	P
Potassium	1	1	_;				1		
Selenium	ł				-		[1	1
Silver	1		- 1		-		1	1	P
Sodium	·	1	-;		, — <u>i</u>		i	,-	
Thallium	!		- ;		-	<u> </u>	·	!	P
Vanadium	1	1	- i	<u> </u>	ı- i		l		
Zinc	1		- <u>,</u>		, – i			1-	P
Cyanide	1	·	-;		-		1	<u></u>	<u>, — </u>
1	i —		-;		-			<u></u>	<u>.</u>
•	·	· <u></u>	'		· '	·		· —	· ——

Comments:			
			
	 		 A

5A SPIKE SAMPLE RECOVERY

EPA SAMPLE NO.

Lab Name: ESE

Contract: NAVY

SW1-1S

NA L P5 1 * 1

Lab Code: SPM1

Case No.:

SAS No.:

SDG.No.:

Matrix (soil/water): SOIL

Level (low/med):

% Solids for Sample: 86.3

Concentration Units (ug/L or mg/kg dry weight): MG/KG

r	(1						
Control		1			· · · · · · · · · · · · · · · · · · ·			
Limit	Spiked Sample	1	Sample		Spike			
%R	Result (SSR)	CI	Result (SR)	C		%R	Q	M
l		_		_ :				!
l ;	ll_	_ 1		_		,		
1 75-125	60.37981	_{1	16.1649	_	53.56			P
!!	19.46451	_1	20.9036	<u> </u>	2.25	-64.0		F
 	1	1						
75-125		_ ;	0.1393	ו <u>ט</u> ו	5.36	87.7		P
1 75-125	5.11191	_ !	0.3213	۱ <u> ت</u> ا	5.36	95.4		P
		_		۱ <u> </u>			\Box	
1 1	148.59231	_ {	111.8908	_	21.42	171.3		P
l :	1 1 _	_	,	! _ !				
75-125	1 24.78401	_ {	2.3623	_	26.78	83.7	ΙΞ.	P
l	11	_		<u> </u>			_	P
1 <u>75-125</u>	43.5980	- {	5.0348	U	53.56	81.4	}	P
1	!	1		l			!	
1	1	ļ					_	
		_ 1	0.0110	ו טו	2.76	104.9		CV
75-125	38.56001	_ 1	4.9036	ا _ ا	42.85	78.5		P
1		_ ;						—
75-125	0.75471	_ 1	0.2366	Ū	2.25	33.5	N	F
75-125	4.00531	_	0.5249	l Ū l	5.36	74.7	N	P
1	1	- ;		-				!
75-125	99.63821	_	20.2464	-	107.12	74.1	N	! P
1		_		ا ا			-	
75-125	37.8851	_	24.0889	! !	21.42	64.4	N	P
1	1	_;		! _			, —	ı—
1	1	_1		ا <u> </u>		1	: _	¦
** ** **	75-125 75-125 75-125 75-125 75-125 75-125 75-125 75-125 75-125	%R Result (SSR) 75-125 60.3798 19.4645 75-125 4.6984 75-125 5.1119 148.5923 24.7840 24.7840 25.125 24.7840 25.125 24.7840 25.125 28.949 26.125 28.949 25.125 28.949 25.125 28.949 25.125 28.949 25.125 28.949 25.125 28.949 25.125 28.949 25.125 28.949 25.125 28.949 25.	Limit Spiked Sample Result (SSR) C	Limit Spiked Sample Result (SR) T5-125 G0.3798 16.1649 20.9036 T5-125 4.6984 0.1393 T5-125 24.7840 2.3623 T5-125 43.5980 T5-125 38.5600 4.9036 T5-125 4.0053 0.5249 T5-125 99.6382 20.2464 T5-125 99.6382 20.2464 T5-125	Limit Spiked Sample Sample %R Result (SSR) C Result (SR) C 75-125 60.3798 16.1649 20.9036 19.4645 20.9036 0.1393 0 75-125 5.1119 0.3213 0 75-125 24.7840 2.3623 111.8908 75-125 43.5980 5.0348 0 75-125 38.5600 4.9036 0.0110 0 75-125 0.7547 0.2366 0 75-125 4.0053 0.5249 0 75-125 99.6382 20.2464 0	Limit Spiked Sample Result (SR) C Result (SR) C Added (SA) 75-125 60.3798 16.1649 53.56 19.4645 20.9036 2.25 75-125 4.6984 0.1393 U 5.36 75-125 5.1119 0.3213 U 5.36 148.5923 111.8908 21.42 75-125 24.7840 2.3623 26.78 75-125 38.5600 4.9036 42.85 75-125 0.7547 0.2366 U 2.25 75-125 4.0053 0.5249 U 5.36 75-125 99.6382 20.2464 107.12	Limit Spiked Sample Result (SSR) C Result (SR) C Added (SA) %R	Limit Spiked Sample Result (SR) C Added (SA) Result (SR) C Added (SA) Result (SR) C Added (SA) Result (SR) C Added (SA) Result (SR) C Added (SA) Result (SR) C Added (SA) Result (SR) C Added (SA) Result (SR) C Added (SA) Result (SR) C Added (SA) Result (SR) C Added (SA) Result (SR) C Added (SA) Result (SR) C Added (SA) Result (SR) C Added (SA) Result (SR) C Added (SA) Result (SR) C Added (SA) Result (SR) C Added (SA) Result (SR) C Added (SA) Result (SR) C Added (SA) Result (SR) C Added (SA) Result (SR) Result (SR) C Added (SA) Result (SR) Result (SR) C Added (SA) Result (SR) Result (SR) C Added (SA) Result (SR) Result (SR) Result (SR) C Added (SA) Result (SR) Result (SR) Result (SR) C Added (SA) Result (SR) Resu

Comments:			

5A SPIKE SAMPLE RECOVERY

EPA SAMPLE NO.

Lab Name: ESE

Contract: NAVY

SW1-1S

NALP51 *1 SDG.No.:

Lab Code:

SPM2

Case No.:

SAS No.:

Matrix (soil/water): SOIL

Level (low/med):

% Solids for Sample: 86.3

Concentration Units (ug/L or mg/kg dry weight): MG/KG

1	· ·		1		.				1
	Control		1		ļ			-	
1	! Limit	Spiked Sample	1	Sample	:	Spike		!	1
! Analyte	%R		CI	-	C:	- , ,	%R	0	M
1	1	1	•		1	!		۱ آ	
!Aluminum	•		-		ı – ı			_	
Antimony	1 75-125	69.0505	_ ;	16.1649	-	56.89	93.0	!	P
Arsenic	1	22.5715	_ ;	20.9036	I_1	2.18	76.5	! _	F
Barium	ŧ	l	- 1		ا <u>_</u> ا			! _ !	<u> </u>
Beryllium	75-125	5.64191	_ :	0.1479	۱ <u> ت</u> ا			<u> </u>	P
Cadmium	75-125	5.8831	_ 1	0.3413	۱ <u> ت</u> ا	5.69	103.4	!_	<u>P</u>
Calcium	1		_ 1		۱ <u> </u>			! _	
Chromium	1	154.28931	<u> </u>	111.8908	ا _ا	22.75	186.4	!_	P !
Cobalt	l	1	_		ا <u>_</u> ا			<u>ا_</u>	
Copper	1 75-125	27.63701	_	2.3623	_	28.44	88.9	<u>ا</u> ا	P
Iron	,	1	_ 1		<u> </u>			· —	<u>P</u>
Lead	1 75-125	53.25921	_ {	5.3477	<u> U</u> 1	56.89	93.6	I_	P_
Magnesium	1		<u> </u>		ا_!		l	!_	!_!
Manganese		11	_ 1		! _!			1_	
Mercury	1 75-125		_ !	0.0099				١_	1 <u>CV</u> 1
Nickel	1 75-125	40.82301	_ 1	4.9036	ا_!	45.51	78.9	!	<u>P</u>
Potassium		ll_	_		_		l	1_	
Selenium	1 75-125		_ 1	0.2288					<u>F</u>
Silver	1 75-125	4.86481	_ !	0.5575	۱ <u> ت</u>	5.69	85.5	!_	IP I
Sodium	1	ll	- 1		!_		1	1	۱ <u> </u>
Thallium	1 75-125	112.79851	_	20.2464	I _	113.77	81.4	!_	1 <u>P</u> 1
:Vanadium	1	1	_		! _ !		1	1_	ا ا
Zinc	1 75-125	37.77171	_	24.0889	ا_ ا	22.75	60.1	١N	<u>P</u>
Cyanide	1	11	_	· ·	۱ <u> </u>			!_	
1.		1	- 1		-		!	١_	ı — ı

Comments:			

5B POST DIGEST SPIKE SAMPLE RECOVERY

EPA SAMPLE NO.

Lab Name: ESE

Contract: NAVY

SOIUA

NACDLS*1

Lab Code: SPX

Case No.:

SAS No.:

Matrix (soil/water): SOIL

Level (low/med):

Concentration Units: MG/KG

Analyte	Control Limit %R	! Spiked Sample Result (SSR) 	C	Sample Result (SR)	C	Spike Added (SA)	k %R	Q	M
Aluminum			_		<u> </u>			Ι_	-
Antimony		{ }	<u> </u>		_			!_	P_
Arsenic		1	<u> </u>		_			! _	
Barium		l	<u> </u>		_			l	
Beryllium		!!	<u> </u>		ا_ا			١_	P_
Cadmium	l	487.28	_	3.00	<u>U</u> I	500.0	97.5	!_	<u>P</u>
Calcium	1	1	_		ا _ ا			1_	· :
Chromium			_ !		_	***************************************		!	<u>P</u>
Cobalt	l		_		۱_		<u> </u>	١_	
Copper	1	l;	_		_		l	!	<u> P</u>
Iron	l	81949.84	ا_ ^ا	75993.75	_	5000.0		١_	! <u>P</u>
Lead	1	l289.08	_	146.51	! _!	500.0	86.3	١_	<u>P</u>
Magnesium	l	!	ا_!		ا _ ا		ļ	!_	!
Manganese	ŧ	1	ا _ ا		ا _ ا		l	١ <u>_</u>	١
Mercury	1	1	! _ !		ا_!		!	١_	1
Nickel	!	<u> </u>			ا _ ا		!	!_	P
Potassium	!	11	!	l 	ا_ا		!	!_	!
Selenium	<u> </u>	<u> </u>	!		ا _ ا		<u> </u>	1_	l
Silver	{	1	1_		!			!_	Ι <u>Ρ</u> _
Sodium	ł <u> </u>		!_		!		f	!_	!
Thallium	1		I	1	!_		!	۱_	P
Vanadium	1		!_		!_		1	I_	!
Zinc	1		I_	l	!_		ł	l_	1 P
	1		!_	1	!_		1	1_	I

Comments:				
		-		

5B POST DIGEST SPIKE SAMPLE RECOVERY

EPA SAMPLE NO.

Lab Name: ESE

Contract: NAVY

SW1-1A

Lab Code: SPX

Case No.: SAS No.:

NALPSIX 1 SDG.No.:

Matrix (soil/water): SOIL

Level (low/med):

Concentration Units: MG/KG

! !	 Control	 	; ;		;			 	
! ! Analyte			C	Sample Result (SR)	C i	Spike Added (SA)	%R	101	M
!	1	!	- !		- 1			ا آ ا	
Aluminum	1	•	1		- 1		l		_
Antimony	1	•			-			1	
Arsenic	1	1	1-1		_			I_ I	!
Barium		1	1		-		1	1 _ 1	
Beryllium	1		!_!		<u> </u>			1_1	
Cadmium	1	1	!		_			!_ !	!
Calcium	1		1		<u> </u>			<u> </u>	· '
Chromium	!	l	!_		_			1_1	· !
Cobalt			1		<u> </u>			I_	l ¹
Copper	1	1	!_		ا_ ا			<u> </u>	
Iron	1	1	!		_			1_	·
Lead	I		1_		!_!			!_!	l — '
Magnesium		1	!_		<u> </u>		l	1_1	· ˈ
Manganese	1	1	!_		!_		l	<u> </u>	·
Mercury	1	1	!		! '			1_	
Nickel	!	1	!_		! _		i	I_	1
! Potassium	ł	1		l	!	<u> </u>		!	!
Selenium	!	1	!_		!_		1	1_	l
Silver	1	1501.16	!_	4.90	<u>U</u>	500.0	100.2	!	<u> P</u>
Sodium	l		!_	1	I_		ł	! _	١
! <u>Thallium</u>	!	788.52	1_	178.78	!	700.0	! <u>87.1</u>	1_	! <u>P</u>
!Vanadium	l	1	!_	l	!		l	1_	1
Zinc	l	1 697.94	1_	1 212.71	1_	500.0	97.0	!	P
l	!	1	!_	l	!	l	l	!_	!

Comments:		
	 ··	

DUPLICATES

EPA SAMPLE NO.

SOILD

Lab Name: ESE

Contract: NAVY

NACDLS > Z

Lab Code:

Case No.:

SAS No.:

Matrix (soil/water): SOIL

Level (low/med):

% Solids for Sample: 87.6

% Solids for Duplicate: 87.6

Concentration Units (ug/L or mg/kg dry weight): MG/KG

!	- 1	i	11			1	11	
	Control	• •	1 1			! 		1
Analyte	Limit :	Sample (S) 	CII	Duplicate (D)	Cl	RPD	Q ! !	! M
Aluminum			<u> </u>		1 1		`i i-	i
Antimony	-		1 1 1		1-1	!	11	¦P
Arsenic		1	\mathbf{L}^{-}		1-1	ļ .	11	1
Barium			1		.,-,	ł	11	1
Beryllium			г [—] н і		1-1	ł	11	P
Cadmium		0.3315	ווטו	0.3023	וּטוּ	1	11	IP
Calcium	!		ı [—] ı :		1-1	!	11	!
Chromium !	1		-		1-1	1	11	1P
:Cobalt :	1	1	1711		1-1	l	11	1
Copper	1		1-11		1-1	1	11	IP
:Iron	!	4304.4885	1-11	4603.0651	- -	6.7	11	IP
Lead		5.1938		4.7364	IŪI	1	11	IP
Magnesium		1	1711		- -	ł	11	1
Manganese	ł		1-11		1-1	1	11	·
Mercury		1	1-11		1-1	1	11	·;
Nickel			1-11		1-1	ļ	11	1P
!Potassium!	1.		1711		1-1	-	11	1
Selenium			1 1		-,-,	1	·	1
Silver	1	1	ı [—] ı ;		1-1	!	11	IP
Sodium	1	1	1-11		-,-,	1	11	1
Thallium		1	1-11		-,-,	1	11-	I P
Vanadium	1	1	1-11		1-1	1	· , , –	·;=
Zinc		1	1-11		- -		· ,	P
Cyanide		1	1-11		- I - i	, ———	`i i-	`i=
1		•	1 11		1-1	1	- -	-1-

6 DUPLICATES EPA SAMPLE NO.

Lab Name: ESE

Contract: NAVY

SW1-2D

Lab Code:

Case No.:

SAS No.:

Matrix (soil/water): SOIL

Level (low/med):

% Solids for Sample: 85.8

% Solids for Duplicate: 85.8

Concentration Units (ug/L or mg/kg dry weight): MG/KG

1	1	1	11		1.1	11	
	Control :					11	!
Analyte	Limit	Sample (S)	cii	Duplicate (D)	CII	RPD 110	· M
1	1			Dupileuce (D)	Ŭ : i	112	1
Aluminum	1	!	- 1		-ı-i i		·i
Antimony	1	4.4612	1 <u>0</u> 11	4.0441	ווּטוּ		I P
Arsenic	1	1.9114		1.9519	1 1	2.111	F
Barium	1	!	1-11		1-11		-i
Beryllium	1	0.1450	۱ ۵ ۱۱	0.1314	ווסו	11	P
!Cadmium !	1	0.3346	ווטו	0.3033	ווסו		P
Calcium	1		1-11		1-11		1
Chromium !	ţ	7.6756	1 1	6.6201	-,-,	14.811	I P
Cobalt	1	1	1 - 1 1		-,-,,	11	
Copper	1	4.1969	1 - 1 1	3.7731	1-11	10.611	I P
Iron	!	-	1 1		-,-,		I P
Lead !	-	9.7746	1 - 1 1	7.2035	1-11	30.3	P
! Magnesium!	:	1	1 - 1 1		1-11		- i
Manganese	1		$1^{-}11$		1-11		1
Mercury	1	0.1047	1011	0.1150	ווסו		CV
Nickel :		4.7390	1 1 1	4.0087	-1-11	16.711	I P
Potassium	{	1	1 1 1		-1-11		- _!
Selenium		0.2347	បើព	0.2329	ווטו	11	F
Silver		0.5465	1 0 11	0.4954	ווּטוּ		; P
Sodium		1	$_{1}$		-ıı		· i —
Thallium		19.6290	1011	17.7940	ווּטוּ		P
!Vanadium !		1	$\mathbf{I}^{-1}\mathbf{I}^{-1}$	***************************************	1 - 1		-
Zinc		16.4564	1 1	14.7821	1-11	10.711	P
Cyanide		ł			1-11		· i —
1	!		1 11		-,-,,	11	- ;

LABORATORY CONTROL SAMPLE

Lab Name: ESE

Contract: NAVY

Lab Code: SP1

Case No.:

SAS No.:

SDG.No.:

Solid LCS Source:

Aqueous LCS Source:

·	· · · · · · · · · · · · · · · · · · ·							
	Aque	ous (ug/I	,) ;		Solid			
Analyte	True	Found	%R	True	Found C	Lim	its	%R
Aluminum	I				11_	11		
Antimony !	500.0	499.85	100.0		11_	!!	{	
Arsenic !	20.01	22.10	110.5		11	11		
Barium !	1				t t	!!		
Beryllium!	50.0	48.49	97.0		! i	!	1	
Cadmium !	50.01	50.82	101.6		11_	!		
Calcium !	1				11	11		
Chromium !	200.01	205.23	102.6		!	1		
Cobalt !	1			1	11	1		
Copper !	250.01		97.8		1 1	1	!	
Iron !	1000.01		101.4		11_	!		
Lead !	500.0	496.07	99.2		11_	!		
Magnesium!	!			}	11_	!	:	
Manganese!	t	!			11_	1		
Mercury	5.01	5.24	104.8	1	11	1		l
Nickel	400.0	385.02	96.3		11_	11		
Potassium!				ł	11_	11		l
Selenium !	20.01	21.30	106.5	l	11_	1		l
Silver !	50.01	51.64	103.3	1	1 1			
Sodium !				ł	1	1		
Thallium !	1000.0	1011.44	101.1	l	1 - 1	1		
Vanadium !						1		
Zinc !	200.0	201.14	100.6	1	1	1		
Cyanide !				1	1	1		
}	!			i	1	1		

LABORATORY CONTROL SAMPLE

Lab Name: ESE

Contract: NAVY

Lab Code: SP2

Case No.:

SAS No.:

SDG.No.:

Solid LCS Source:

Aqueous LCS Source:

1		:							
i i	Aque	ous (ug/L)		Sol	iđ	(mg/kg)		
Analyte	True	Found	%R	True	Found			nits	%R
11			!						
Aluminum	1	<u> </u>				1_1			l
Antimony	500.01	496.99	<u>99.4</u> !		l	1_1			1
<u>Arsenic</u>	1		{		!	1_1		l	!
Barium	;	:	!		l	1_1		l	!
Beryllium	50.0	47.34	94.7		1	1_1		l	l
Cadmium	50.01	49.49;	99.01		ł	1_1		l	l
Calcium	1	1			f	1_1		<u> </u>	!
Chromium !	200.01	199.891	99.91		†	1_1		1	1
Cobalt	1		1		1	!_!			!
Copper	250.01	245.72	98.3		1	1_1		l	!
Iron	1000.01	996.81 l	99.71		1	1_1			l
Lead	500.01	494.381	98.9		!	1_1		1	1
Magnesium	1				1	1_1		1	1
Manganese	1	!			!			1	1
Mercury		1			1			!	1
Nickel	400.01	379.701	94.91		1	1-1			1
Potassium		1	I		1	1-1		!	!
Selenium	1	1				1-1		t	1
Silver	50.01	46.48	93.0		1	-		ŧ	ļ
!Sodium !	1	1				-		!	
Thallium	1000.0	997.801	99.8		1	1-1		1	1
Vanadium	1	1			1	-		ļ.	1
Zinc	200.01	199.42	99.7		1			I C	1
Cyanide		-			1	1-1		1	1
		1			1	1 1		!	1
		i			1	` _ 			1

DATA SUMMARIES ph & TOX, NACDLB

Environmental Science & Engineering 04/16/91 STATUS:

PROJECT NUMBER 3914022 0201 FIELD GROUP NACDLB

PROJECT NAME NAVY - CD LANDFILL

LAB COORDINATOR J.D. SHAMIS

SAMPLE ID PARAMETER	-	STORET METHOD	FLDBLK NACDLB
	ONIIS	MEIROD	, †
DATE TIME			02/22/91 15:00
PH,LAB	STD UNITS	403 T	5.45
TOX	UG/L-CL	70353 I	< 10

Environmental Science & Engineering 04/16/91

PROJECT NUMBER 3914022 0201 FIELD GROUP NACDLB PROJECT NAME NAVY - CD LANDFILL

STATUS:

LAB COORDINATOR J.D. SHAMIS

SAMPLE ID		STORET METHOD	EQPBLK NACDLB 4
DATE TIME			02/22/91 13:00
PH,LAB	STD UNITS	403 T	5.39
TOX	UG/L-CL	70353 I	< 10

04	1/	1	7	/	9	1

Environmental Science & Engineering, Inc.

Page 1

QC SUMMARY FOR NACDLB FOR NON-CLP FORM ANALYTES

Method Blank Sample Summary

BATCH	DATE	SAMPLE	STORET	NAME	UNITS	FOUND
G18558	02/25/91	MB*NONE*1	403*I	PH,LAB	SU	6.10
G19137	02/28/91	MB*NONE*1	70353*I	TOX	UG/L-CL	1

Replicate Analysis Sample Summary

BATCH	DATE	SAMPLE	STORET	NAME	UNITS	REP1	REP2	RPD	MAX RPD
G18558	02/25/91	NACDLB*4	403*I	PH, LAB	SU	5.39	5.32	1.31	2.0
G19137	02/28/91	NACDLB*1	70353*I	TOX	UG/L-CL	< 10	<10	0.0	30
		NACDLB*4		TOX	UG/L-CL				30

Standard Matrix Spike Recovery Summary

BATCH	DATE	SAMPLE	STORET	NAME	UNITS	8R	%R CRIT
G19137	02/28/91	SP1*NONE*1	70353*I	TOX	UG/L-CL	100	70-130

Sample Matrix Spike Recovery Summary

BATCH	DATE	SAMPLE	STORET	NAME	UNITS	%R	%R CRIT	UNSPIKED
G19137	02/28/91	SPM*NACDLB*4	70353*I	TOX	UG/L-CL	96	70-130	ND

DATA SUMMARIES

pH, TOX, CONDUCTIVITY, HARDNESS, & TOC; NACTURE #

FIELD GROUP NACLDW1

PROJECT NUMBER 3914022 0201

PROJECT NAME NAVY - CD LANDFILL LAB COORDINATOR J.D. SHAMIS

SAMPLE ID'S PARAMETERS UNITS	STORET METHOD	MW1 NACLDW1 1
DATE TIME		03/11/91 16:10
PH, LAB STD UNITS	403 I	5.05
SPECIFIC COND., LAB UMHOS/CM	95 I	789
TOX UG/L-CL	70353 I	65
HARDNESS MG/L-CACO3	900 TITR	318
CARBON, TOC MG/L	680 I	2.2

STATUS:

Environmental Science & Engineering 04/16/91

FIELD GROUP

PROJECT NUMBER 3914022 0201 NACLDW1

PROJECT NAME

NAVY - CD LANDFILL

LAB COORDINATOR J.D. SHAMIS

- CMODEM	MW2
	NACLDW1
METHOD	2
	03/11/91
	14:25
403	4.19
I	
95	552
I	
70353	41
I	
900	192
TITR	
680	6.3
I	
	70353 I 900 TITR 680

PROJECT NUMBER 3914022 0201 FIELD GROUP

NACLDW1

PROJECT NAME NAVY - CD LANDFILL LAB COORDINATOR J.D. SHAMIS

SAMPLE II PARAMETER	-	STORET METHOD	MW3 NACLDW1 3
DATE TIME			03/12/91
PH, LAB	STD UNITS	403 I	6.10
SPECIFIC	COND., LAB UMHOS/CM	95 I	231
TOX	UG/L-CL	70353 I	< 10
HARDNESS	MG/L-CACO3	900 TITR	144
CARBON, TO	•	680 I	1.8

Environmental Science & Engineering 04/16/91

STATUS:

PROJECT NUMBER 3914022 0201 FIELD GROUP NACLDW1

PROJECT NAME NAVY - CD LANDFILL LAB COORDINATOR J.D. SHAMIS

SAMPLE ID'S PARAMETERS UNITS	STORET METHOD	MW4 NACLDW1 4
DATE TIME		03/12/91 10:15
PH, LAB	403 I	6.32
SPECIFIC COND., LAB UMHOS/CM	95 I	1300
TOX UG/L-CL	70353 I	42
HARDNESS	900	532
MG/L-CACO3 CARBON, TOC MG/L	TITR 680 T	4.6

PROJECT NUMBER 3914022 0201 FIELD GROUP

NACLDW1

PROJECT NAME NAVY - CD LANDFILL

LAB COORDINATOR J.D. SHAMIS

SAMPLE ID'S PARAMETERS UN	NITS	STORET METHOD	MW5 NACLDW1 5
DATE TIME			03/12/91 14:40
PH, LAB	TD UNITS	403 I	6.13
SPECIFIC COL	ND.,LAB MHOS/CM	95 I	504
TOX	G/L-CL	70353 I	4100
HARDNESS	G/L-CACO3	900 TITR	204
CARBON, TOC	G/L	680 I	4.3

Environmental Science & Engineering 04/16/91

PROJECT NUMBER 3914022 0201 FIELD GROUP NACLDW1

PROJECT NAME NAVY - CD LANDFILL LAB COORDINATOR J.D. SHAMIS

STATUS:

SAMPLE ID'S PARAMETERS UNITS	STORET METHOD	MW6 NACLDW1 6
DATE TIME		03/12/91 08:25
PH, LAB	403 TS I	6.11
SPECIFIC COND., LA UMHOS/C	B 95	542
TOX UG/L-CL	70353 I	150
HARDNESS MG/L-CA	900 CO3 TITR	291
CARBON, TOC MG/L	680 I	4.9

STATUS:

PROJECT NUMBER 3914022 0201 FIELD GROUP NACLDW1

PROJECT NAME NAVY - CD LANDFILL LAB COORDINATOR J.D. SHAMIS

SAMPLE ID PARAMETER	-	STORET METHOD	FD#1 NACLDW1 8
DATE TIME			03/11/91 16:10
PH,LAB	STD UNITS	403 I	4.18
SPECIFIC	COND.,LAB UMHOS/CM	95 · I	740
TOX	UG/L-CL	70353 T	60
HARDNESS	•	900	314
CARBON, TO	MG/L-CACO3 C MG/L	TITR 680 I	2.2

PROJECT NUMBER 3914022 0201 FIELD GROUP NACLDW1

PROJECT NAME NAVY - CD LANDFILL LAB COORDINATOR J.D. SHAMIS

SAMPLE ID'S PARAMETERS UNITS	STORET METHOD	FLDBLK NACLDW1 9
DATE TIME		03/12/91 15:05
PH, LAB STD UNITS	403	6.21
SPECIFIC COND., LAB UMHOS/CM	95 7	<10.00
TOX	70353	< 10
UG/L-CL HARDNESS	900	4.0
MG/L-CACO3 CARBON, TOC MG/L	TITR 680 T	1.1

FIELD GROUP

PROJECT NUMBER 3914022 0201 NACLDW1

PROJECT NAME NAVY - CD LANDFILL LAB COORDINATOR J.D. SHAMIS

SAMPLE ID'S PARAMETERS	STORET	EQPBLK NACLDW1
UNITS	METHOD	10
DATE		03/11/91
TIME		16:30
PH, LAB	403	5.45
STD UNITS	I	
SPECIFIC COND., LAB	95	<10.00
UMHOS/CM	I	
TOX	70353	16
UG/L-CL	I	
HARDNESS	900	2.0
MG/L-CACO3	TITR	
CARBON, TOC	680	<1.0
MG/L	I	

Environmental Science & Engineering 04/16/91

STATUS:

FIELD GROUP

PROJECT NUMBER 3914022 0201 NACLDW1

PROJECT NAME NAVY - CD LANDFILL LAB COORDINATOR J.D. SHAMIS

STORET METHOD	EQPBLK NACLDW1 11
	03/12/91 14:55
403	5.83
95	<10.00
70353	<10
900	4.0
680 TTTR	1.3
	403 I 95 I 70353 I 900 TITR

QC SUMMARY FOR NACLDW1 FOR NON-CLP FORM ANALYTES

Method Blank Sample Summary

BATCH	DATE	SAMPLE	STORET	NAME	UNITS	FOUND
G18881	03/13/91	MB*NONE*1	403*I	PH, LAB	STD UNITS	6.35
G18883	03/12/91	MB*NONE*1		PH, LAB	STD UNITS	5.77
G18862	03/14/91	MB*NONE*1	95*I	SP COND.	UMHOS/CM	1.20
G18898	03/15/91	MB*NONE*1		SP COND.	UMHOS/CM	1.33
G19139	03/14/91	MB*NONE*1	70353*I	TOX	UG/L-CL	0.06
G19294	03/27/91	MB*NONE*1		TOX	UG/L-CL	ND
G19046	03/24/91	MB*NONE*1	900*TITR	HARDNESS	MG/L-CACO3	ND
G19398	04/08/91	MB*NONE*1	680*I	CARBON, TOC	MG/L	1.2

Replicate Analysis Sample Summary

	DATE	SAMPLE	STORET	NAME	UNITS	REP1	REP2	RPD
	03/13/91	NACLDW1*3	403*I	PH, LAB	SU	6.10	6.12	0.33
G18883	03/12/91	NACLDW1 * 1		PH,LAB	SU	5.05	5.03	0.40
G18862	03/14/91	NACLDW1*8	95*I	SP COND	UMHOS/CM	740	742	0.270
G18898	03/15/91	NACLDW1*6		SP COND	UMHOS/CM	542	548	1.10
		NACLDW1*9		SP COND	UMHOS/CM	<10	<10	0.0

Standard Matrix Spike Recovery Summary

BATCH	DATE	SAMPLE	STORET	NAME	UNITS	%R	%R CRIT
G19139	03/14/91	SP1*NONE*1	70353*I	TOX	UG/L-CL	100	70-130
		SP2*NONE*1		TOX	UG/L-CL	110	70-130
G19294	03/27/91	SP1*NONE*1		TOX	UG/L-CL	100	70-130
G19046	03/24/91	SP1*NONE*1	900*TITR	HARDNESS	MG/L	102	85-115
		SP2*NONE*1		HARDNESS	MG/L	100	85-115
G19398	04/08/91	SP2*NONE*1	680*I	TOC	MG/L	87.0	85-115
		SP3*NONE*1		TOC	MG/L	88.7	85-115

Sample Matrix Spike Recovery Summary

BATCH	DATE	SAMPLE	STORET	NAME	%R	%R CRIT	UNSPIKED
G19294	03/27/91	SPM*NACLDW1*8	70353*I	TOX	110	70-130	60
		SPM2*NACLDW1*8		TOX	110	70-130	60
G19046	03/24/91	SPM1*NACLDW1*9	900*TITR	HARDNESS	100.0	85-115	4.0
		SPM2*NACLDW1*9		HARDNESS	99.0	85-115	4.0
G19398	04/08/91	SPM1*NACLDW1*8	680*I	TOC	108	85-115	2.2
		SPM2*NACLDW1*8		TOC	104	85-115	2.2

DATA SUMMARIES METALS, NACLDW1*1-6,8-11

COVER PAGE - INORGANIC ANALYSES DATA PACKAGE

Lab Name: ESE		Contract: NAVY	
Lab Code: TOTALS	Case No.:	SAS No.:	SDG.No.:
SOW No. 7/88			
	EPA Sample No. EQPBLK EQPBLK FD#1 FLDBLK	Lab Sample ID NACLDW1*10 NACLDW1*11 NACLDW1*8 NACLDW1*9	
	MW1S MW1S MW2	NACLDW1*1 SPM1*NACLDW1*1 SPM2*NACLDW1*1 NACLDW1*2	
	MW2D MW3 MW4 MW5 MW6	RP*NACLDW1*2 NACLDW1*3 NACLDW1*4 NACLDW1*5 NACLDW1*6	
Were ICP interel	ement corrections app	lied?	Yes/No Y
Were ICP backgro	und corrections appli	ed?	Yes/No Y
application	e raw data generated be of background correc-	tions?	Yes/No
Comments:			
I certify that t	his data package is i	n compliance with th	e terms and
other than the c in this hardcopy	e contract, both tech onditions detailed abo data package has been designee, as verifie	nically and for comp ove. Release of the n authorized by the	leteness, for data contained Laboratory Manager
Signature:		Name:	
Date:		Title:	
	COVER	PAGE - IN	

COVER PAGE - INORGANIC ANALYSES DATA PACKAGE

Lab Name:				
	ESE	·	Contract: NAVY	
Lab Code:	DISS.W	Case No.:	SAS No.:	SDG.No.:
SOW No.	7/88			
		EPA Sample No. EQPBLK DISS EQPBLK DISS FD#1 DISS FLDBLK DISS MW1 DISS MW1S DISS MW1S DISS MW2 DISS MW2 DISS MW2D DISS MW3 DISS MW4 DISS MW5 DISS MW6 DISS	Lab Sample ID NACLDW1*10 NACLDW1*11 NACLDW1*8 NACLDW1*9 NACLDW1*1 SPM1*NACLDW1*1 SPM2*NACLDW1*1 NACLDW1*2 RP*NACLDW1*2 NACLDW1*2 NACLDW1*3 NACLDW1*4 NACLDW1*5 NACLDW1*6	
		ement corrections appl	lied?	Yes/No Y
Were ICP	interel			103/110 1
Were ICP	backgrou	und corrections applie	ed?	Yes/No Y
Were ICP	backgrowes, were		ed? Defore	·
Were ICP	backgrowes, were	und corrections applie e raw data generated b	ed? Defore	Yes/No Y
Were ICP If y appl	backgrowes, were	und corrections applie e raw data generated b	ed? Defore	Yes/No Y
Were ICP If y appl Comments: I certify condition other tha in this h	that the colored	und corrections applie e raw data generated b	ed? Defore tions? In compliance with the Dically and for comploye. Release of the Dical authorized by the	Yes/No Y Yes/No e terms and leteness, for data contained Laboratory Mana
Were ICP If y appl Comments: I certify condition other tha in this h	that the contractory inager's	und corrections applied a raw data generated be of background correct this data package is in the contract, both technological about the conditions detailed about a package has been	ed? Defore tions? In compliance with the Dically and for comploye. Release of the Dical authorized by the	Yes/No Y Yes/No e terms and leteness, for data contained Laboratory Mana

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	· · · · · · · · · · · · · · · · · · ·		NALYSIS DATA S			!	MW 1
Lab Name: ESE			Contract: N	IAVY	7	1_	riw i
Lab Code: WATE	RS Ca	ase No.:	SAS No.	:		5	SDG No.:
Matrix (soil/w	ater): WATE	₹		La	b Sar	nple	ID: NACLDW
Level (low/med):			Da	ate R	eceiv	red: 03/12/
Solids:	0.0						
Con	centration [Jnits (ug/I	or mg/kg dry	wei	ight)	: UG,	/L
	I CANCE AND		Consortion			IM	[.]
	CAS No.	Analyte	Concentration		Q	l M l	
	17429-90-5			<u> </u>			1
	17440-36-0			<u> </u>		-¦	
	17440-38-2		<u> </u>	-		-¦	i 1
	17440-39-3 17440-41-7			¦-¦-	·	-¦	1 1
		Cadmium	3.00	֓֓֓֓֓֞֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֡֓֓֡֓֡֓֓֡֓֓֡֓֡֓֡֓֡֓֡		- -	1
		Calcium		<u> </u>		- i -	ĺ
		Chromium]	ı-ı-		-,	
		Cobalt		1_1		_	!
	17440-50-8	Copper		1_1		_	1
		Iron	28803.80	<u> _ </u> _		_ <u> </u>	
		Lead		<u> U </u>	<u></u>	_! <u>P</u> _	1
	17439-95-4			<u> </u>		_	
	17439-96-5			!-!-		_!—	i .
	17439-97-6		<u> </u>	¦¦-		-¦—	i I
,	17440-02-0 $17440-09-7$		1	¦-¦-		_	I
	17782-49-2		1	<u></u>		-;	<u> </u>
	7440-22-4		<u>'</u>	i-i-		-;	
	7440-23-5		22696.52	i-i:		P	1
		Thallium		1-1			1
	17440-62-2	Vanadium		1^{-1}		_ ₁	1
	17440-66-6	Zinc	1	1[1			}
	l	Cyanide	1			_	1
	<u> </u>		1	!_! .		_ _	1
Color Before:		Clari	ty Before:			Te	xture:
Color After:		Clari	ty After:			Ar	tifacts:
Comments:							
		·		<u> </u>			

		INORGANIC A	ANALYSIS DATA S	SHE	ET		PA SAMPLE N
						·	MW1 - 015
Lab Name: ESE			Contract: N	VAV	Y	!_	
Lab Code: DISS	S.W C	ase No.:	SAS No.	.:		S	DG No.:
Matrix (soil/w	rater): WATE	R		L	ab Sa	mple	ID: NACLDW1
Level (low/med	1):			D	ate R	eceiv	ed: 03/12/9
% Solids:	0.	0					
Con	centration	Units (ug/	L or mg/kg dry	we	ight)	: UG/	L
•	1	<u> </u>	<u> </u>	1 1		 ,	
	ICAS No.	Analyte	Concentration	C	Q	M	
•	7429-90-5	Aluminum		i-i		-ii	
	17440-36-0	Antimony	{	1_1		$=$ $_{1}$ $=$ $_{1}$	
	17440-38-2		1	!_!		_!!	
	17440-39-3		1	1_1		_ ' '	
	7440-41-7			_		_	
	17440-43-9		3.00	! <u>U</u> !		_ <u> P</u> _	•
	7440-70-2			!-!		_!!	
	17440-47-3			!!		!!	
	17440-48-4			!-!		_	
	17440-50-8 17439-89-6		22070 22	[-]		-:-::	
	17439-89-8	Lead	23978.22	֡֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓		_ <u>P</u> P	
		Magnesium		12		-¦ - -¦	
		Manganese		;-;		-¦¦	
		Mercury		<u>;</u> -;		-::	
	17440-02-0	Nickel		-		-ii	
		Potassium		i^{-1}		-i-i	
	17782-49-2			<u> </u>		- i i	
	17440-22-4	Silver		-		-i-i	
	17440-23-5			1		11	
		Thallium	1	1		${1}{1}$	
	17440-62-2	Vanadium	1	[1		
	17440-66-6		-	1		$=$ \mid $=$ \mid	
		Cyanide		-		_¦;	
Color Before:	· · · · · · · · · · · · · · · · · · ·	Clari	ty Before:	· —	' <u></u>	— '— ' ™es	ture:
Color After:			ty After:				
COTOL WIFET.		CIGII	of Wirei.			ALU	ifacts:
Comments:							

		INORGANIC	1 ANALYSIS DATA S	SHEET	י	EPA SAM	PLE NO.
Inh Name: ECE			Cambus mb	*****		MW2	· · · · · · · · · · · · · · · · · · ·
Lab Name: ESE			Contract: 1	YVAV		1	
Lab Code: WAT	ERS	Case No.:	SAS No	.:		SDG No.	:
Matrix (soil/	water): WAT	ER		Lab	Samp	le ID: NA	CLDW1*2
Level (low/me	ed):			Dat	e Rec	eived: 03	/12/91
% Solids:	0	.0					
Co	ncentration	Units (ug/	L or mg/kg dry	weig	ght):	UG/L	
	CAS No.	Analyte	 Concentration		0 1		
	<u> </u>	1			Q	M ¦	
		Aluminum	1	: <u>-</u> :-	1	<u> </u>	
		Antimony		!_!_	!	!	
	1 <u>7440-38-2</u> 1 <u>7440-39-3</u>			<u> </u> - -	!		
		Beryllium		<u> -</u>	:	 ¦	
	7440-43-9			<u>ַ װַ</u>	;	P	
	17440-70-2		1	iři–	 ;	- ;	•
	17440-47-3		1.	i-i-	i	i	
	17440-48-4	Cobalt		ı-ı-	1	<u> </u>	
	17440-50-8	Copper	1		1	1	
	17439-89-6		1 23659.54	<u> </u> _	1	P I	
	17439-92-1			<u> ت</u> ا	{	P	
	17439-95-4	Magnesium		'_' <u>_</u>	<u> </u>	1	
	17439-96-5	Manganese		!-!-	!	!	
	17439-97-6			!_!_	!	!	
	17440-02-0	_ Nickel _ Potassium		!-!-	<u> </u>	— <u>;</u>	
		Selenium		!-!-	:	 ¦	
	7440-22-4			<u> </u>	!	 ¦	
	17440-23-5	Sodium	41670.85	i-i-	<u> </u>	P	
	17440-28-0	Thallium	1	i-i-		-	
	17440-62-2	Vanadium	1	i-i-		;	
	17440-66-6		1	1-1-			
	1	Cyanide	l	1-1-		<u> </u>	
		_	1	<u> </u>		<u> </u>	
Color Before:		Clari	ty Before:			Texture:	
Color After:		Clari	ty After:			Artifacts	•
Comments:	•						
comments.							
							·
			· · · · · · · · · · · · · · · · · · ·				

		INORGANIC .	ANALYSIS DATA S	SHEET	ı	EPA SAMPLE NO.
Lab Name: ESE			Contract: 1	YVAF	!	MW2 - D155
I-b C-d-, DIGG				'		
Lab Code: DISS	•W C	ase No.:	SAS No.	. :	٤	SDG No.:
Matrix (soil/w	ater): WATE	R		Lab S	ample	ID: NACLDW1*2
Level (low/med):			Date 1	Receiv	red: 03/12/91
% Solids:	0.	0 ,				
Con	centration	Units (ug/	L or mg/kg dry	weight): UG/	'L
	CAS No.	 Analyte	 Concentration	I I ICI Q		
	1 <u>7429-90-5</u>	 Aluminum		<u> </u>	_	
	7440-36-0			¦-;		
	17440-38-2	Arsenic		<u> </u>		
	1 <u>7440-39-3</u> 17440-41-7			!-!	_!!	
	7440-43-9	Beryllium		 	¦=-¦	
	17440-70-2	Calcium	3.00	¦∸¦	_ <u> P</u>	
	17440-47-3	Chromium			i i	
	17440-48-4	Cobalt	1		—i—i	
	17440-50-8	Copper			_ ' _ '	
	17439-89-6		2285.66		_ <u>P</u>	
	1 <u>7439-92-1</u> 1 <u>7439-95-4</u>		47.00	ַ עַן יַ	_ <u> P</u>	
	7439-96-5	Manganese	!	-	—¦—;	
8	17439-97-6	Mercury	1	¦ − ¦ −−−−	-:-:	
	1 <u>7440-02-0</u>	Nickel	1	i-i	—;—;	
	17440-09-7	Potassium		_	_ _	
	17782-49-2	Selenium			_:_:	
	7440-22-4	Silver			' '	
	7440-23-5 7440-28-0	Doglum	i	<u> - </u>	—!—!	
		Vanadium		¦-¦	—¦¦	
	17440-66-6	Zinc		\'- !	—¦—¦	
		Cyanide		i-i		
	1					
Color Before:		Clari	ty Before:		Tex	ture:
Color After:		Clari	ty After:		Art	ifacts:
Comments:						
		<u> </u>				
						

	· · · · · · · · · · · · · · · · · · ·		
INORGANIC	ANALYSIS	DATA	SHEET

-	~ * * * * * * *	110
EPA	SAMPLE	NO.

		-	MW3
Contract	NAVV	!	

Lab Name: ESE

Lab Code: WATERS Case No.: SA

SAS No.:

SDG No.:

Matrix (soil/water): WATER

Lab Sample ID: NACLDW1*3

Level (low/med):

Date Received: 03/13/91

% Solids:

0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	 Analyte	 Concentration	 C	Q	
7429-90-5	Aluminum		-		-;;
17440-36-0	Antimony		1		_ _
17440-38-2	Arsenic				
17440-39-3	Barium		1-1		_,,
17440-41-7	Beryllium	1	1 1		_!!
17440-43-9	Cadmium	3.00	١Ū١		1 P
17440-70-2	Calcium		1-1		_,,
17440-47-3	Chromium		1-1		_,,
7440-48-4	Cobalt	1	-		- ı ı
17440-50-8	Copper	1	! -		_,,
17439-89-6	Iron	1458.28	1-		- P
17439-92-1	Lead	47.00	١Ū		- P
17439-95-4	Magnesium		!	l	_,,
17439-96-5	Manganese		1	l	
17439-97-6	Mercury		1	!	_,,
17440-02-0	Nickel	1	!		_,,
17440-09-7	Potassium	†	!	ļ	_,,
17782-49-2	Selenium				_,,
17440-22-4	Silver	1	!-	l	_ ı _ ı
17440-23-5	Sodium	9850.45	1	1	P
17440-28-0	Thallium	1	!_	!	_ ı _ ı
17440-62-2	! Vanadium	1	1	ļ	_ _
17440-66-6	Zinc	1	1	!	_,,
	Cyanide	1		1	_,,
1	1		1	1	-1 $-$ 1
			_		

Color Before: Color After:	Clarity Before: Clarity After:	Texture: Artifacts:
Comments:	- -	

		į.	
	 		

		INORGANIC	1 ANALYSIS DATA 9	SHE	ET	EF	A SAMPLE N
Lab Name: E	7 9 F						MW3 -D15.
nap wame. b	355		Contract: 1	VAV	Y	' <u>-</u>	
Lab Code: D	DISS.W	Case No.:	SAS No.	.:		SE	G No.:
Matrix (soi	ll/water): WA	rer		L	ab Sam	mple I	D: NACLDW1
Level (low/	med):			D	ate Re	eceive	d: 03/13/9
% Solids:		0.0					
	Concentration	n Units (ug/	L or mg/kg dry	we	ight):	: UG/I	!
	CAS No.	 Analyte	 Concentration	I I	Q		•••
	7429-90-5	: 5 Aluminum		<u> </u>			
		Antimony		i-i		-`;`;	
		Arsenic		i=i		-ii	
	17440-39-3	3 Barium		1 1		-	
	7440-41-	7 Beryllium		1[1]		_	
	17440-43-9	Cadmium	3.00	<u>ַו </u> ַ עַוּ		P	
	7440-70-2	Calcium		1_1			
	7440-47-3	Chromium		1_1		_	
	17440-48-4	Cobalt		!_!.		_!!	
	7440-50-8	Copper	10 01	!=!		_!!	
	1 <u>7439-89-6</u> 1 <u>7439-92-</u>	iron		<u> B</u> .		_! <u>₽</u> _!	
		Magnesium	47.00	֓֓֓֞֓֞֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֡֓֡֓֓֡֓֡֓֡֡֡֡֡֡֡֡֡		<u> </u>	
	7439-95-9	Manganese		¦¦-		-¦¦	
	7439-97-6	Mercury		<u></u>		-	
	17440-02-0	Nickel		<u> </u>		-¦¦	
	17440-09-	Potassium		<u> </u> -		-¦¦	
	17782-49-2	Selenium		i-i		-ii	
	17440-22-4	Silver		i-i		-ii	
	17440-23-5	Sodium	1	i-i		-	
	17440-28-0	Thallium		1 1		-ii	
	17440-62-2	Vanadium		1 1		-,,	
	7440-66-6		{	(<u> </u>			
		Cyanide		<u> </u> _ .		-	
Color Befor	·e:	Clarit	y Before:	''-	·	-''	ure:
Color After	:		ty After:				facts:
			-,			WILL	idets:

			INORGANIC A	ANALYSIS DATA	SHEET	Г		SAMPLE NO
	· · · · · · · · · · · · · · · · · · ·	. ·					1	MW4
Lab N	ame: ES	E		Contract: 1	YVAN		1	
Lab C	ode: WA	TERS C	Case No.:	SAS No	.:		SDC	No.:
Matri:	x (soil	/water): WATE	R		Lal	o Sam	ple II	: NACLDW1
Level	(low/m	ed):			Dai	te Re	ceived	1: 03/13/91
% Sol	ids:	0.	0					
	C	oncentration	Units (ug/	L or mg/kg dry	wei	ght):	UG/L	
			1				1	
		CAS No.	: Analyte	Concentration	ICI	Q	M I	
		7429-90-5	Aluminum	<u> </u>	<u> </u>		-::	
		7440-36-0		<u> </u>	<u> </u>		-¦¦	
		17440-38-2		·			-¦;	
		17440-39-3		! 			-¦¦	
			Beryllium		;-;-		-	
		17440-43-9	!Cadmium		ָּיִם וֹ ⁻		P	
		17440-70-2		3.00	; <u>~</u> ;—		- ¦ = -	
		7440-47-3		!	¦¦		-;;	
		7440-48-4		<u> </u>	;-;-		-::	
		7440-50-8		!	<u> </u>		-¦¦	
		7439-89-6		6010.69	-:-		P	
		17439-92-1	Lead	47.00	¦ਜ਼¦~		P	
			Magnesium	1 47.00	<u> U </u> _		- =	
		17439-95-5	Manganese	1	<u>;-</u> :-		-::	
		7439-97-6	Morgury	†	1-1-		-	
		17440-02-0	Mickel	<u> </u>	!-!-		-¦¦	
				<u> </u>	!-!-		-!!	
			Potassium	<u> </u>	!-!-	· · · · · · · · · · · · · · · · · · ·	-!!	
		7782-49-2		<u> </u>	!-!-		-!!	
		17440-22-4		<u> </u>	!-!-		_!!	
		7440-23-5		129807.18	!_!_	<u> </u>	<u> </u>	
			Thallium	<u> </u>	!-!-	·	_ ! !	
			Vanadium	<u> </u>	!-!-		_!!	
		7440-66-6		<u> </u>	!_!_		_!!	
			Cyanide	!		1	_	
		i		l	_ _		_!!	
Color	Before		Clari	ty Before:			Text	ire:
Color	After:		Clari	ty After:			Arti	facts:
Comme	nts:							
	•	•						

		1 INORGANIC ANALYSIS DATA SHEET					EPA SAMPLE NO		
Lab Name: ESE			Contract: N		 MW4 -01s				
			Contract: r	MAVI		' 			
Lab Code: DISS	C.W.C	ase No.:	SAS No.	. :		SDG 1	No.:		
Matrix (soil/w	ater): WATE	R		Lab	Sample	e ID:	NACLDW1*		
Level (low/med	1):			Date	Rece:	ived:	03/13/91		
% Solids:	0.	0							
Con	centration	Units (ug/	L or mg/kg dry	weigh	nt): U(S/L			
	CAS No.	 ! Analyte	 Concentration	I I) M	-			
	1	1 .			2 IF1				
	7429-90-5			<u> </u>		_			
	17440-36-0			!-!	!	_!			
	17440-38-2 17440-39-3			<u> </u>	!_				
	7440-33-3			\-\	<u>;</u>	-;			
	17440-43-9	Cadmium	3.00	[P	-¦			
	17440-70-2			i∸i	¦≛-	-;	•		
	17440-47-3	Chromium		i-i	i_	-			
	17440-48-4	Cobalt				- i			
	17440-50-8	Copper		1-1		_ }			
	17439-89-6		585.33	_ <u> </u>	I P	_			
	17439-92-1			ו <u>ט</u> ו	<u> </u>	_			
	17439-95-4			!-!	!_	-!			
	17439-96-5	Manganese		! !	!_	-!			
	17439-97-6 17440-02-0	Nickel		¦-¦	¦	- :			
	7440-09-7			¦-¦		-			
	17782-49-2			¦-¦		-¦			
	17440-22-4	Silver		¦-¦	'-	-¦			
	17440-23-5			i-i	i-	- <u>;</u>			
	17440-28-0		l	i-i		-;			
	17440-62-2	Vanadium		i - i		- <u>i</u>			
	17440-66-6	Zinc				- 			
		Cyanide		_ _		<u> </u>			
	1	1		'_' <u></u>	l	_ 1			
Color Before:		Clari	ty Before:		Te	extur	e:		
Color After:	· · · · · · · · · · · · · · · · · · ·	Clari	ty After:		A	rtifa	cts:		
Comments:									
· ·									

		INORGANIC A	1 ANALYSIS DATA S	HEET	· [E	PA SAMPLE NO		
		INONGHIVE MADIOID DATA DADA			-	 	MW 5		
Lab Name: ESE			Contract: N	YVAI		i_			
Lab Code: WATE	CRS C	ase No.:	SAS No.	. :		5	SDG No.:		
Matrix (soil/w	vater): WATE	R		Lal	Sam	nple	ID: NACLDW1*		
Level (low/med	1):			Dat	te Re	ecei	red: 03/13/91		
Solids:	0.	0							
Cor	centration	Units (ug/	L or mg/kg dry	wei	ght):	: UG/	/L		
	I CAC No	1					. · 		
	CAS No.	Analyte	Concentration	i C i	Q	M			
	7429-90-5	! Aluminum	!	<u> -</u> -		-;	! !		
	17440-36-0		1	`-:	·	- ;	! !		
	17440-38-2			;-;-		-;			
	17440-39-3		<u> </u>	i-i-		-;	! !		
	7440-41-7			i-i-		-;	!		
	17440-43-9		3.00	i 17 i —	77.10	P			
	17440-70-2		l	i~i-		-			
	17440-47-3			i-i-		-;			
	17440-48-4			1-1-		-1	1		
	17440-50-8			1-1-	****	-,	•		
	17439-89-6		38128.60	- -	·	IP	1		
		Lead		ו סו		IP	•		
	17439-95-4			!_!_			1		
	17439-96-5	! Manganese	ł	1_1_		_ I	!		
	17439-97-6	Mercury	;	1_1_		_ I	1		
	17440-02-0	Nickel	1	1_1_		_!	1		
	17440-09-7	Potassium		1_1_			•		
	17782-49-2			!_!_		_!	1		
	17440-22-4		l	1_1_		_	1		
	17440-23-5		1 28441.71	1_1_		_ <u>P</u> _			
	17440-28-0			 _ _		_ '	1		
	17440-62-2		1	 _ _		_ '	1		
	7440-66-6		1	_ _		_'_	1		
		Cyanide		!-!-		_!	1		
	1	·	i	'-'-		_ '	1		
Color Before:		Clari	ty Before:			Te	xture:		
Color After:		Clari	ty After:			Ar	tifacts:		
Comments:									
							·		
							<u> </u>		

		INORGANIC	1 ANALYSIS DATA 9	SHEET	EPA	SAMPLE NO
						MW5 -0155
ab Name: ESE			Contract: 1	YVAV	1	
Lab Code: DIS	S.W	Case No.:	SAS No	.:	SDG	No.:
Matrix (soil/	water): WAI	ER		Lab S	ample ID	: NACLDW1*
evel (low/med	d):			Date	Received	: 03/13/91
Solids:		0.0				
Co	ncentration	Units (ug/	L or mg/kg dry	weight): UG/L	
	1	1	<u> </u>		1 1	
	ICAS No.	Analyte	Concentration	ICI Q	M I	
		Aluminum		i_i		
•		Antimony	!	!_!	!!	
	17440-38-2 17440-39-3		<u> </u>	¦-¦	¦!	
		Beryllium	<u> </u>	<u> </u>	::	
	17440-43-9	Cadmium		֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֡֓֓֓֓֓֡֓֓֓֡֓֡	$-\frac{1}{P}$	
	17440-70-2	Calcium		i=i	—; *- ; ·	
	17440-47-3		†	ı – i – – –	ii	
	17440-48-4	Cobalt	ł	1 1	,,	
	17440-50-8					
	17439-89-6		1 31651.26		P	
	7439-92-1		47.00	וטו	\ <u>P</u>	
	17439-95-4	Magnesium		!_!		
4 4	17439-96-5	Manganese	!	!-!	!!	
	1 <u>7439-97-6</u> 1 <u>7440-02-</u> 0	Mercury	i	!-!	!!	
	17440-02-0	Potassium	i	<u> -</u>	 :	
	7782-49-2	Selenium		!-!	:\:\	
	17440-22-4			<u> </u>		
	17440-23-5		<u>'</u>	<u> -</u>	;;	
	17440-28-0			i-i	;;	
	17440-62-2	Vanadium		i-i	¦¦	
	17440-66-6	Zinc	1	<u>i </u>	— i — i	
	1	Cyanide	1	i-i	ii	
	1	1		1 <u> </u>		
olor Before:		Clari	ty Before:		Textu	re:
olor After:		Clari	ty After:			acts:
omments:			-			
-						
				,		

		INORGANIC A	1 Analysis data s	SHEET	EPA SAMPLE NO.
					 MW6
Lab Name: ESE			Contract: N	YVAV	1
Lab Code: WATE	RS C	ase No.:	SAS No.	.:	SDG No.:
Matrix (soil/w	ater): WATE	R		Lab Sa	ample ID: NACLDW1*6
Level (low/med	1):			Date R	Received: 03/13/91
% Solids:	0.	0			
Con	centration	Units (ug/1	or mg/kg dry	weight)	: UG/L
	CAS No.	 Analyte	 Concentration	I I ICI Q	I I
	17429-90-5	1 Aluminum		[-[_ _
	17440-36-0			<u> </u>	
	17440-38-2			<u> </u>	— —
	17440-39-3			i-i	- i i
		Beryllium	1		-
	17440-43-9	Cadmium		101	I P I
		Calcium		1_1	11
	7440-47-3			1_1	_!!
	17440-48-4	Cobalt		<u> </u>	
	17440-50-8	Copper		!-!	
	17439-89-6		17470.32	!;;!	$- \underline{\underline{P}} $
	17439-92-1			<u> U </u>	_ <u> P_ </u>
	1 <u>7439-95-4</u> 1 <u>7439-96-5</u>			<u> </u>	— <u>; — </u>
	17439-97-6		1 [·	<u> </u>	
	7440-02-0		!	<u> - </u>	
	7440-09-7	Potassium		<u> </u>	— i — i
	17782-49-2	Selenium		i i — —	— i — i
	17440-22-4	Silver		1 1	— i — i
	17440-23-5		20530.04		IP I
	7440-28-0		l	1 1	— 1—1
	17440-62-2	Vanadium		! !	
	17440-66-6				<u></u>
	<u> </u>	Cyanide	1	1_1	!!
	1	· I	ł	!_!	!!
Color Before:	•	Clari	ty Before:		Texture:
Color After:		Clari	ty After:		Artifacts:
Comments:					
				· · · · · · · · · · · · · · · · ·	

		.]	INORGANIC A	NALYSIS DATA S	SHE	ET			SAMPLE NO
Lab Name: I	ESE			Contract: 1	VAV	ΥΥ	1		MW6 -015
Lab Code: I	DISS.	.W Ca	ase No.:	SAS No	. :			SDG	No.:
Matrix (so:	il/wa	ter): WATE	₹		L	ab Sa	mple	ID:	NACLDW1
Level (low,	/med)):			D	ate R	ecei	ved:	03/13/9
% Solids:		0.0).						
	Conc	centration (Jnits (ug/I	or mg/kg dry	мe	ight)	: UG	/L	
					1 1		!	· !	
	1	CAS No.	Analyte	Concentration	C	Q	М		
		7429-90-5	Aluminum		<u> </u> -:	-	[. !	
		7440-36-0	Antimonv		i-i		-;	·¦	
	1	7440-38-2	Arsenic	,	i		-i	·	
		7440-39-3			1-1		-i-	·i	
	· 1	7440-41-7	Beryllium		I_I		_		
		7440-43-9		3.00	ឬរ		P P	1 .	
	ļ	7440-70-2	Calcium		1 1			1	
		7440-47-3			1_1			1	
		7440-48-4					_!	ŀ	
	, i	7440-50-8			!		_'	. 1	
			Iron	12315.56	<u> </u>		_ <u> P</u>	. !	
			Lead		וַעַוּ		_ <u> P</u>	. !	
		7439-95-4	Magnesium		!_!		_!	. !	
	i	7439-96-5	Manganese		!_!		_!_	.!	
		7439-97-6	Mercury		!-!		!	- !	
		7440-02-0	Nickel		!-!		_		
		7782-49-2	Selenium]-:		_		
			Silver		1-1		-:-	- i	
		7440-23-5			!-:		-:	- ¦	
			Thallium		<u> </u> -		-;	. [
		7440-62-2	Vanadium		<u>'</u> -'		-;	· <u>'</u>	
	1	7440-66-6	Zinc		i-:		-	- [
	i		Cyanide		;-;		- [- :	
					ij		_;_	i	
Color Befor	e:		Clarit	y Before:			T∈	xtur	e:
Color After	::		Clarit	y After:			Ar	tifa	cts:
Comments:									

	;	INORGANIC A	l Analysis data s	SHEET		EPA S	SAMPLE NO
ab Name: ESE			Contract: 1	NAVY	!		FD#1 (of MWI
Lab Code: WATE	RS C	ase No.:	SAS No	. •		SDG 1	,
				• •		000	
Matrix (soil/wa	ater): WATE	R		Lab	Sample	ID:	NACLDW1*
Level (low/med):			Date	Recei	.ved:	03/12/91
Solids:	0.	0					
Con	centration	Units (ug/	L or mg/kg dry	weigh	t): ប	G/L	
		!	!	· ·		-	
	CAS No.	Analyte	Concentration	C Q	M	1	
	7420 00 5	1 7 7	<u></u>	!-!	!	- !	
	1 <u>7429-90-5</u> 1 <u>7440-36-0</u>		<u> </u>	!-!	!	- i	
	7440-38-0		i	¦-¦		- <u>i</u>	
			í	!-!	!_	_ i	
	1 <u>7440-39-3</u> 1 <u>7440-41-7</u>		i	!-!	!	- !	
	7440-43-9			_	¦ - -	- <u> </u>	
	7440-70-2		3.00	ַ ַ ַ ַ ַ ַ ַ ַ	<u> P</u>	- <u>i</u>	•
	7440-70-2		!	!-!			
	7440-48-4	!Cobalt	!	!-!	¦	- 1	
	7440-50-8	Copper	1	¦¦	!	- <mark>i</mark>	
	7439-89-6	Trop	27362.89	¦-¦	- -	- [
		Lead		i o i —	F	- ',	
	7439-95-4	Magnesium		¦~¦	; <i>=</i> -	-¦	
	7439-96-5	Manganese	<u> </u>	<u>'-</u> '	;	-¦	
	7439-97-6	Mercury	<u> </u>	<u>'-</u> '	¦	-	
	7440-02-0		·	¦-¦	<u>'</u>	- ' .	
	7440-09-7		·	i-i	;	-¦	
		Selenium		i-i	:-	- [
		Silver	1	i-i	 ;	-;	
		Sodium	22044.14	i-i	I P	-;	
		Thallium		i-i	`; * -	- <u>i</u>	
		Vanadium		i-i		- <u>i</u>	
		Zinc		i-i	— i –	- <u>`</u>	
	l	Cyanide		i - i	i_	- <u>i</u>	
		1	I			-	
olor Before:		Classi	bu Dofone.			-	
			ty Before:		Te	extur	e:
Color After:		Clari	ty After:		Aı	tifa	cts:
Comments:							
							

FORM I - IN

CA 74 74 74 74 74 74 74 74	0. stration S No. 29-90-5 40-36-0 40-38-2 40-39-3 40-41-7	Units (ug/: Analyte Aluminum Antimony Arsenic Barium	Contract: SAS N L or mg/kg dr Concentratio	o.: D y we	ab Sa ate R ight)	mple ecei	SDG No ID: N ved: 0	0#1 - 015 (of MW-, 0.: NACLDW1*
Matrix (soil/water Level (low/med): % Solids: Concent CA 74 74 74 74 74 74 74 7	0. stration S No. 29-90-5 40-36-0 40-38-2 40-39-3 40-41-7	Units (ug/: Analyte Aluminum Antimony Arsenic Barium	L or mg/kg dr	A Me	ate R	mple eceiv	ID: N	IACLDW1*
Level (low/med): * Solids: Concent CA 74 74 74 74 74 74 74 7	0. stration S No. $\frac{29-90-5}{40-36-0}$ $\frac{40-38-2}{40-39-3}$ $\frac{40-39-3}{40-41-7}$	Units (ug/: Analyte Aluminum Antimony Arsenic Barium	I	y we	ate R	ecei	ved: 0	
Level (low/med): * Solids: Concent CA 74 74 74 74 74 74 74 7	0. stration S No. $\frac{29-90-5}{40-36-0}$ $\frac{40-38-2}{40-39-3}$ $\frac{40-39-3}{40-41-7}$	Units (ug/: Analyte Aluminum Antimony Arsenic Barium	I	y we	ate R	ecei	ved: 0	
% Solids: Concent CA 74 74 74 74 74 74 74 74 74 7	29-90-5 40-36-0 40-38-2 40-39-3 40-41-7	Units (ug/: Analyte Aluminum Antimony Arsenic Barium	I	y we	ight)	: UG		13/12/91
Concent CA CA 74 74 74 74 74 74 74 7	29-90-5 40-36-0 40-38-2 40-39-3 40-41-7	Units (ug/: Analyte Aluminum Antimony Arsenic Barium	I	1 1			/L ! !	
CA 74 74 74 74 74 74 74 74	29-90-5 40-36-0 40-38-2 40-39-3 40-41-7	Analyte Aluminum Antimony Arsenic Barium	I	1 1			/L ! !	
74 74 74 74 74 74 74 74	29-90-5 40-36-0 40-38-2 40-39-3 40-41-7	Aluminum Antimony Arsenic Barium	 Concentratio 	n C	Q	M	 	
74 74 74 74 74 74 74 74	29-90-5 40-36-0 40-38-2 40-39-3 40-41-7	Aluminum Antimony Arsenic Barium	Concentratio	n C - - - -	Q	- M	·	
74 74 74 74 74 74 74 74	40-36-0 40-38-2 40-39-3 40-41-7	Antimony Arsenic Barium		-¦-¦ -¦-¦		-¦	:	
74 74 74 74 74 74 74 74	40-36-0 40-38-2 40-39-3 40-41-7	Antimony Arsenic Barium		-;-;				
74 74 74 74 74 74 74 74	40-38-2 40-39-3 40-41-7	Arsenic Barium				-;	1	
74 74 74 74 74 74 74 74	40-41-7			-i-i		-;		
<u>74</u> <u>74</u> <u>74</u> <u>74</u> <u>74</u> <u>74</u>	40-41-7		l	_ 1 _ 1		-1	ì	
<u>74</u> <u>74</u> <u>74</u> <u>74</u> <u>74</u> <u>74</u>		Beryllium		<u> </u>		_	1	
<u>74</u> <u>74</u> <u>74</u> <u>74</u> <u>74</u>	40-43-9		3.00	ַטוַ_		_ <u>P</u> _	1	
<u>74</u> <u>74</u> <u>74</u> <u>74</u> <u>74</u>		Calcium	i	_!_!		_!	1	
<u>74</u> <u>74</u> <u>74</u> <u>74</u>		Chromium Cobalt	i ————	-!-!		-!		
<u>74</u> <u>74</u> <u>74</u>		Copper		-¦-¦		-	i i	
<u>74</u> <u>74</u> <u>74</u>	39-89-6	Iron	22605.60	-¦-¦		- -	! !	
<u>74</u> <u>74</u>	39-92-1		47.00	ַ װַ װַ		- 	!	
174	39-95-4	Magnesium		-i-i		- i =	!	
	39-96-5	Manganese				_;		
1/4	39-97-6	Mercury		<u> </u>			,	
	40-02-0			_!_!.			1	
174	92-49-7	Potassium		_!_!		_!	-	
! 74	40-22-4	Selenium Silver	i 	-¦-¦		-!	1	
	40-23-5	Sodium		-:-:		-¦	i	
		Thallium		-¦-¦		-¦	i 1	
174	40-62-2	!Vanadium		-;-;		-	! !	
174	40-66-6	Zinc		-		-¦'	!	
l		Cyanide		_ _		- i i		
		1					l	
Color Before:		Clarit	cy Before:			Ter	xture:	
Color After:		Clarit	y After:				tifact	
Comments:			-			\		- ·
		•						

		INORGANIC A	ANALYSIS DATA :	SHE	ET		TA SAMPLE
Lab Name: ESE			Contract: 1	ŇĀV	'Y	} 	FLDBLK
Lab Code: WATI	ERS C	ase No.:	SAS No	.:		s	DG No.:
Matrix (soil/v	water): WATE	R		I	ab Sa	mple	ID: NACLDW
Level (low/med	i):						ed: 03/13/
% Solids:	0.	0					00,10,
Cor	ncentration	Units (ug/	L or mg/kg dry	we	ight)	: UG/	L
	CAS No.	 Analyte	 Concentration	 C	Q	i M	
	7429-90-5	Aluminum	[-		-¦¦	
	17440-36-0	Antimony	1	1		-;;	
	17440-38-2	Arsenic		1_1			
•	17440-39-3	Barium	<u> </u>	1_1		_''	
	17440-41-7	Beryllium		!=!		_!!	
	17440-43-9 17440-70-2	Calgium	3.00	וַשַּוּ		_! <u>P_</u> !	•
	7440-47-3	Chromium	1	!!		-	
	7440-48-4		<u>'</u>	<u>'</u> -;		-::	
	17440-50-8		i	<u> </u> -;		-¦¦	
	17439-89-6	Iron	27.82	BI		P	
	17439-92-1	Lead		ו טו		- i P	
	17439-95-4	Magnesium		1-1		- [
	17439-96-5	Manganese		1_1		-,,	
	17439-97-6	Mercury		1_1		_	
	7440-02-0	Nickel	i	1_1		_;;	
	7440-09-7	Potassium		1_1		_	
	17782-49-2	Selenium		!_!		_11	
		Silver	<u> </u>	!=!		_!!	
	1 <u>7440-23-5</u> 1 <u>7440-28-0</u>	'Mballium	271.18	B		_ <u> P</u>	
	7440-62-2	!Vanadium	<u> </u>	!!		-!!	
	7440-66-6	Zinc	!	!-!		-¦¦	
	1	Cyanide	·	;-;		-	
		l		<u>'</u> -'		-;;	
		• • • • • • • • • • • • • • • • • • • •	· · · · · · · · · · · · · · · · · · ·	. – .		-''	
Color Before:		Clari	ty Before:			Tex	ture:
Color After:		Clarit	ty After:			Art	ifacts:
Comments:	•						
		· · · · · · · · · · · · · · · · · · ·					
							

Lab Name: ESE Lab Code: DIS Matrix (soil/	3 · .							
			Contract:	NA	VY	; 	FLDBLK	-01
	ic w	Case No.:			-	·		
Matrix (soil/	· · · · · · · · · · · · · · · · · · ·		SAS N	0.:		S	DG No.:	
	water): WATE	ER			Lab Sa	mple	ID: NACLD	W 1 *
Level (low/me	ed):				Date R	eceiv	ed: 03/13	/91
% Solids:	0.	0						
Со	ncentration	Units (ug/	L or mg/kg dr	y w	eight)	: UG/	L	
	CAS No.	 Analyte	 Concentratio	l n I C	! ! Q			
	7429-90-5	Aluminum	f	-¦-	ļ	-{{		
	17440-36-0	Antimony		_;_		-;;		
	7440-38-2	Arsenic						
	7440-39-3 7440-41-7		!	-!-	!	_!!		
	17440-41-7			- 1 ==	¦	-¦¦		
	17440-70-2		3.00	-¦-	<u> </u>	-¦ P- ¦		
	17440-47-3	Chromium		-¦-		-¦¦		
	7440-48-4	Cobalt	1	-i-	i ———	-ii		
	7440-50-8	Copper		<u> </u>		_		
	17439-89-6		27.55	<u> </u> <u>B</u>		IP I		
	7439-92-1	Lead	47.00	_!ㅁ		_ <u> P</u> _ !		
	1 <u>7439-95-4</u> 1 <u>7439-96-5</u>	Manganesium	i	-¦-	!	-!!		
	7439-97-6	Mercury	!	-¦	<u> </u>	-¦¦		
	17440-02-0	Nickel	i	-;-	i	-¦¦	•	
	17440-09-7	Potassium	l	-i-	1	-ii		
	7782-49-2			_ 1 _	1	-11		
	7440-22-4	Silver		_	1			
	7440-23-5	Sodium		_!_	!	_!!		
	17440-28-0	Vanadium	<u> </u>	-¦	<u> </u>	-!!		
	7440-66-6	Zinc	!	-¦-	<u>; ———</u>	-¦}		
	1	Cyanide	·	-¦-	!	-¦¦		
	1				i			
Color Before:		Clari	ty Before:			Tex	ture:	
Color After:		Clari	ty After:			Art:	ifacts:	
Comments:								
							· · · · · · · · · · · · · · · · · · ·	-

		INORGANIC A	NALYSIS DATA S	HEET		EPA SAMPLE N
					; ;	EQPBLK
Lab Name: ESE			Contract: N	YAVY	į	
Lab Code: WAT	ERS C	ase No.:	SAS No.	• •		SDG No.:
Matrix (soil/	water): WATE	R		Lab	Sample	e ID: NACLDW1
Level (low/me	d):			Dat	e Recei	ived: 03/12/9
% Solids:	0.	0				
Со	ncentration	Units (ug/l	L or mg/kg dry	weig	nt): U	G/L
	CAS No.	 Analyte	 Concentration	I I	Q M	- -
	7429-90-5	! Aluminum		¦-¦-		-¦
	17440-36-0		1	i-i-	i-	- j .
	17440-38-2			1-1-		_
	17440-39-3	Barium	1	! _ ! _	<u> </u>	<u>_</u> I
		:Beryllium		1_1_		_!
	17440-43-9		3.00	<u> </u>	<u> P</u>	
	17440-70-2		!	!-!-	¦_	
	17440-47-3		i	<u> </u>	<u> </u>	-:
		Cobalt	<u> </u>	<u> </u>		-¦
	1 <u>7440-50-8</u> 17439-89-6	Copper	57.99	B	P	- !
	17439-89-6			151-	\ <u>F</u>	
		Magnesium		¦~¦-	<u>'</u>	- [
	17439-96-5	Manganese	<u>'</u>	i-i-	;_	- ¦
	17439-97-6			i-i-	<u>;</u> _	- <u>i</u> .
		Nickel	1	i-i-		<u> </u>
		Potassium		1-1-	-	_
	17782-49-2			- -		_1
	17440-22-4	Silver	1			<u> </u>
	17440-23-5	Sodium	200.01	B	I P	<u> </u>
	17440-28-0		1	1_1_		<u> </u>
	17440-62-2			!_!_	!_	_ !
	7440-66-6			!_!_	!_	_
	<u> </u>	Cyanide		·¦-¦-		- [
		_ •	1	'-'-	'_	-'
Color Before:		Clari	ty Before:		T	exture:
Color After:		Clari	ty After:		A	rtifacts:
Comments:						

:						

		INORGANIC A	NALYSIS DATA	SHE	ET		PA SAMPLE NO.
Inh Mamas DOF			~			!	EQPBLK -DISJ
Lab Name: ESE			Contract:	NAV	Y	1	
Lab Code: DISS	S.W C	ase No.:	SAS No			SI	OG No.:
Matrix (soil/w	water): WATE	R		L	ab Sa	mple :	ID: NACLDW1*1
Level (low/med	i):			D	ate R	eceive	ed: 03/12/91
% Solids:	0.	0					
Cor	ncentration	Units (ug/L	or mg/kg dry	we	ight)	: UG/1	L
	1	1 1		1 1		1	
	CAS No.	Analyte	Concentration	ICI	Q	IM I	
	7429-90-5	 Aluminum		-¦¦		-!!	
	17440-36-0			-¦-¦		-¦¦	
	7440-38-2	Arsenic		-		-¦¦	
	17440-39-3			:i-:		-;;	
		Beryllium		i-i		-ii	
$\frac{\partial f_{ij}}{\partial t} = \frac{\partial f_{ij}}$	17440-43-9		3.00	ាប៊ា		P	
	17440-70-2			1			
	17440-47-3			1-1		-,	
	17440-48-4			1-1		_	
	17440-50-8			1-1	***************************************	_11	
	17439-89-6	Iron	12.00	וּשוּ	/	P	
	17439-92-1	Lead	47.00	וַטַו		P	
	17439-95-4	Magnesium		1_1		_	
		Manganese		1 _ 1			
	17439-97-6	Mercury		1_1			
	17440-02-0			. _		_!!	
		Potassium		-1-1		_!!	
	7782-49-2			1_1		_	
	17440-22-4	Silver		-!-!		_!!	
	7440-23-5			-!-!		_!!	
	7440-28-0			-!-!		_!!	
	17440-62-2			-!-!		_!!	
	7440-66-6			-{{		-::	
	<u> </u>	Cyanide		-¦-¦		-::	
	· • • • • • • • • • • • • • • • • • • •	· ' ——— .'		- ' '		_''	
Color Before:		Clarit	y Before:			Tex	ture:
Color After:		Clarit	y After:			Art	ifacts:
Comments:							
				·		<u> </u>	·

		INORGANIC	ANALYSIS DATA 9	SHEET			
Lab Name: ESE			Contract: 1	VV &V		l EQPB	LK
Lab Code: WATE	RS C	ase No.:	SAS No	.:		SDG No.:	
Matrix (soil/w	ater): WATE	R		Lab	Sample	e ID: NAC	LDW1 * 1
Level (low/med):			Dat	e Rece:	ived: 03/	13/91
% Solids:	0.	0					
Con	centration	Units (ug/	L or mg/kg dry	weig	ght): U(G/L	
		1	· · · · · · · · · · · · · · · · · · ·		<u> </u>	· -,	
	CAS No.	Analyte	Concentration	C	Q M		
	i 7429-90-5	127		<u>'-</u> '	!	-!	
			i	!-!-	:-	-!	
	1 <u>7440-36-0</u> 1 <u>7440-38-2</u>		<u> </u>	<u> </u>		- [
•	7440-38-2	Parium		¦-¦	!	-	
		Beryllium		!-!-		- <u>i</u>	
	7440-43-9	!Cadmium		֓֓֡֓֞֡֓֓֡֓֓֡֓֡֓֡֓֡֓֡֓֡֓֡֡֓֡֡֡֡֡֡֡֡֡֡֡֡֡		-¦	
		Calcium	. 3.00	¦⋍¦	¦-	-¦	
	7440-47-3		1	'-'-		-¦	
	7440-48-4	Cobalt	<u> </u>	<u> </u>		- <u>`</u>	
	7440-50-8	Copper	<u> </u>	!-!	!-	- !	
		Iron	1 215 03	!-!	\	-:	
	7439-92-1	Lead	215.83	 -	! <u>P</u>	-	
	7439-95-4			` ^;~	\ <u>-</u>	- '	
	7439-96-5	Mangapage		!-!-		-	
	7439-97-6	Mergury	1	<u> - -</u>		- ¦	
	7440-02-0	Mickel		<u> </u>		- (
		Potassium	<u> </u>	<u> -</u> -		-	
	17782-49-2	Selenium		<u> </u>		-	
	17440-22-4	Silver	<u> </u>	<u> -</u> -	!	-!	
		Sodium	174.89	¦ᡖ¦—	! ₌	-	
	7440-28-0	!Thallium	1/4.03	B _	<u> P</u>	-¦	
	7440-62-2	!Vanadium	<u> </u>	<u> </u>	;	- ;	
	7440-66-6	Zinc		¦-¦-		-:	
	1 7440 00 0	Cyanide	!	<u> </u>		-¦	
						_	
Color Before:		Clari	ty Before:		T	exture:	
Color After:		Clari	ty After:		A	rtifacts:	
Comments:							

		INORGANIC	ANALYSIS DATA S	SHEET	ت.	PA SAMPLE NO.
Lab Name: E	ਕ ਸ		Contract			EQPBLK - 0 15
Lab Name: E	SE.		Contract: 1	YVAV	' _	
Lab Code: D	ISS.W	Case No.:	SAS No	. :	s	DG No.:
Matrix (soi	l/water): W	VATER		Lab S	Sample	ID: NACLDW1*1
Level (low/	med):			Date	Receiv	ed: 03/13/91
% Solids:		0.0				
!	Concentrati	on Units (ug/	L or mg/kg dry	weight	:): UG/	L
	1	<u> </u>	1	<u> </u>		
	CAS No.	: Analyte	Concentration	ici o	M I	
	7429-90)-5 Aluminum	<u> </u>	<u> </u>	::	
		5-0 Antimony		i-i	— <u>`</u> —'	
		3-2 Arsenic	\	ì-ì		
		9-3 Barium		i-i	—i—i	
		-7 Beryllium	1	1-1		
	17440-43	3-9 Cadmium	3.00	וּטוּ	IP I	
		0-2 Calcium	1	1 1		
		7-3 Chromium		1_1	=! $=$!	
		3-4 Cobalt	l	_		
)-8 Copper		1_1	11	
		9-6 Iron		1 <u>B</u> 1	P	
		2-1 Lead	47.00	<u> U </u>	! <u>P_</u> !	
		-4 Magnesium		!_!	!!	
	17439-96	-5 Manganese		!-!	!!	
	7440-02	7-6 Mercury 2-0 Nickel	i	<u> </u>	!!	
		9-7 Potassium	\ <u></u>	¦-¦	¦¦	
	7782-49		· [<u> </u>		
		2-4 Silver	<u> </u>	<u> - </u>		
		3-5 Sodium	<u> </u>	<u> -</u>	;;	
		3-0 Thallium		;-;	ii	
		2-2 Vanadium		i-i	ii	
		6-6 Zinc	1	i-i	—i—i	
	1	Cyanide		1-1-		
	1	1		101		
Color Befor	e:	Clari	ty Before:		Tex	ture:
Color After	:	Clari	ty After:		Art	ifacts:
Comments:						
				··· ··· ··· ··· ··		

FORM I - IN

2A INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: ESE

Contract: NAVY

Lab Code: ICV, CCV Case No.:

SAS No.:

SDG.No.:

Initial Calibration Source:

Continuing Calibration Source:

Concentration Units: UG/L

	Initia True	l Calibra Found	tion %R(1)		Continuir Found	ng Cali %R(1)	bration Found	%R(1)!	M
Aluminum Antimony	1000.0	1020.18	102 0!	500.0	527.62	 ! 105.5	515.65	103.1	
Arsenic	1000.01	1020:18	102.0		7 327:02	1			<u></u>
Barium !						l <u> </u>			11
Beryllium	1000.01	1032.00	103.2	500.0	517.27	1 <u>103.5</u>			
Cadmium	1000.0	1005.75	100.6	500.0	509.84	102.01	510.95	102.2	1 <u>P</u>
Calcium !	1			!		۱ <u> </u>			11
Chromium	1000.01	1040.66	104.1	500.0	508.94	1 <u>101.8</u> 1	511.83	102.4	<u>P</u>
Cobalt	{					! <u> </u>		!	!!
Copper	1000.01			500.0			512.88		
!Iron !	<u> 1000.0</u> !			5000.0					
Lead	1000.0I	1059.59	1 <u>106.0</u> 1	500.0	543.32	108.7	518.39	103.7	<u> P</u>
Magnesium						!			
<u>Manganese</u>						ii			! !—— !
Mercury						<u> </u>			! <u>-</u>
Nickel	1000.0	1026.14	102.6	500.0	500.18	100.0	504.02	100.8	<u> </u>
Potassium	l					!!		i	<u> </u>
Selenium	<u> </u>	-				!			
Silver	<u> 1000.0</u>	1003.46			504.68				! <u>P</u>
Sodium	1000.0								! ! <u>P</u>
Thallium	1000.0	1068.87	106.9	700.0	735.53	105.1	749.15	107.0	<u> </u>
Vanadium			·						!!
Zinc	1000.0	1016.46	101.6	500.0	505.74	101.1	511.25	1102.2	! ! P
Cyanide						!		!	<u> </u>
	1	1	1			1	l	1	l l

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

2A INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: ESE

Contract: NAVY

Lab Code: CCV Case No.:

SAS No.:

SDG.No.:

Initial Calibration Source:

Continuing Calibration Source:

<u> </u>									
	Tnitia	l Calibr	ation !		Continuir	ng Cali	bration		1
Analyte	True	Found	%R(1)!	True	Found	%R(1)	Found	%R(1)	M
Aluminum			:= <u> </u>	1		l I		· `	i =
Antimony !	I		1	500.01	523.94	104.81	511.61	102.3	P
Arsenic			1	1					1
Barium !		-	1 1	1		ļ			
Beryllium!			1 1	500.01	512.88	102.61	521.68	104.3	IP
Cadmium !	!		1 1	500.01	510.95	102.21	510.67	102.1	IP
Calcium !	<u> </u>		1	!				! !	11
Chromium !			1	500.01	502.32	100.5	504.19	100.8	1P
Cobalt !	!							!	
Copper !			1 1	500.01	508.09	101.61	500.71	100.1	IP
Iron !	Į.		T	5000.01	5134.48	<u>102.7</u>	5064.41	101.3	I P
Lead !			- I I	500.01	505.11	101.01	509.01	101.8	I P
Magnesium!	!			· · ·					-
Manganese!			·	1				!	
Mercury !	!		1	!				1	
Nickel !	!		·	500.01	504.02	100.8	496.34	99.3	IP
Potassium!	1		1		·			!	
Selenium :	ŀ		11	-				;	
Silver !			1	500.0	509.65	101.91	508.98	101.8	l I P
Sodium !	<u> </u>		1	5000.01		101.5	4973.95		
Thallium !	<u></u>	-	·	700.01	698.38				
Vanadium !			1 1	1				1	1.1
Zinc !	•		- ı i	500.01	507.68	101.5	503.87	100.8	ΙĮ
Cyanide !			1					1	: i =
1			·			!		!	—

⁽¹⁾ Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

2A INITIAL AND CONTINUING CALIBRATION VERIFICATION

_ab Name: ESE

Contract: NAVY

Lab Code: CCV Case No.:

SAS No.:

SDG.No.:

Initial Calibration Source:

Continuing Calibration Source:

Concentration Units: UG/L

1	Initial Calibration			.bration		1 1			
Analyte	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)¦	M
Aluminum		1	_				.	l 'i	ii
Antimony		-	-1	500.01	520.05	104.0	522.80	104.6	P
Arsenic		1	1						1 1
Barium		1	- {	1					ا ا
Beryllium		1	1	500.0	523.86	104.8	515.09	103.0	IP !
Cadmium		1	-1	500.01	516.53	103.3	507.89	101.6	IP !
Calcium		1	1			1		1 1	1 1
Chromium !		1		500.0	513.17	102.6	503.41	100.7	IP !
Cobalt		1	1			! :			11
Copper		1	1	500.0	515.71	103.1	496.29	99.3	IP !
Iron		1	1	5000.0	5138.42	102.8	5039.95	100.8	IP I
Lead		!	- ;	500.0	497.21	99.4	516.82	103.4	IP !
Magnesium		1	-			!		!	
Manganese		1	1	1		1		}	1
Mercury		.	1	l		!		!	
Nickel		1	1	500.0	508.95	101.8	499.08	99.8	IP.
Potassium		1	1	l i	-			l	
Selenium		1	- 1			1		1	
Silver				500.0	511.91	102.4	504.01	100.8	I P
Sodium		1	- I	5000.0	5168.62	103.4	4948.83	99.0	IP
Thallium		ţ	1	700.0	707.50	101.1	703.63	1100.5	I P
Vanadium		1	- ;			1	1	1	
Zinc		1	- !	500.0	507.35	1101.5	503.33	1100.7	I P
Cyanide		1	1						
1		1	- 1	¦		1		!	

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

3 BLANKS

Lab Name: ESE

Contract: NAVY

Lab Code: ICB, CCB, MB

Case No.:

SAS No.:

SDG.No.:

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L

1		1						- 1	1	1	1
1	Initial	į						!	1	1	1
	Calib.	1	Conti	nu	ing Calib	ora	tion	f	Prepa-	1	1
1	Blank	1		Bl	ank (ug/I	ر ر		ł	ration	1	}
Analyte	(ug/L) (21	1	C	2	С	3	Cl	Blank	CI	l M
i -	•				• •			;	1	{	1
Aluminum	!	- 1		_		ı ⁻ ı		1_1	·	1_1	1
Antimony	40.010	ĪΙ [—]	40.01	ប៊ូ ៖	40.0	١Ū١	40.0	U	1 40.0	וַעַו	IP_
Arsenic		- 1 -	 	_ 1		<u>ا آ</u> ا		1_1		1_1	1
Barium		- 1 _	;	<u> </u>		_		1_1	·	1 = 1	1
Beryllium	1.3 [آ ا	1.3	<u>ប</u> ।			1.3	-			
Cadmium	3.010	Ĵ _	3.01	U I	3.0	۱ <u>Ū</u> ۱	3.0	1 <u>U</u> I	3.0	1 <u>U</u> 1	! <u>P</u>
Calcium		_ _		<u> </u>		ا <u>_</u> ا		1_1	!	!_!	
Chromium !	5.710	J¦	5.7	Ū¦	5.7	۱ <u>Ū</u> ۱	5.7	1 <u>U</u> 1	5.7	101	1 <u>P</u>
Cobalt !	1	-1	ļ	<u> </u>		ا _ا		1 _ 1,		!_!	
Copper	5.810		5.8		5.8						1 <u>P</u>
Iron	12.010	<u> </u>	12.0								
Lead	47.01	ו ַ דַ	47.0	<u>U</u> !	47.0	<u> U</u>	47.0	1 <u>U</u> I	147.0	1 <u>U</u> 1	<u>P</u>
Magnesium	!	_	1	<u> </u>	1.	ا _ ا		1_1	1	1_1	1
Manganese	·\	1	1	_ ;		!_!		1_1	ļ	!_!	·
Mercury	<u> </u>	_ _	!	_ ;	-	ا_ا		1_4	1	_	·
Nickel	14.010	֪֞֞֞֞֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓	14.0	<u>Ū</u> :	14.0	<u> U</u> I	14.0	I <u>U</u> I	14.0	101	<u> P</u>
Potassium	1	_		_		!_!		1_1	1	1_1	1
Selenium	1	<u></u>		_ ;		_		1_1	1	1_1	· I
Silver	4.91	<u>֚֚֚֚֚֚֚֚֚֚֚֚֚֚֚֚֚֚֚֚֚֚֚֚֓֞֞</u>	4.9	U					1 4.9	۱ <u>Ū</u> ا	I P
Sodium	59.71	֪֞֓֞֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓	59.71	<u>U</u> :	59.7	۱ <u>0</u>	59.7	١ <u>Ū</u> ١	61.860	B	I P
Thallium :	176.010	ַן דַ	176.0	Ū l	176.0	١Ū	176.0	۱ <u>Ū</u> ۱	176.0	<u>ו </u> ַ ַ ַ וּ	l I P
Vanadium		_ _	<u> </u>	_:		I _		151	!	1_1	
Zinc	5.61	<u>บิ</u> เ	5.6	<u><u>u</u> :</u>	5.6	۱ <u> </u>	5.6	۱ <u> ت</u> ۱	5.6	۱ <u>υ</u>	I P
Cyanide	1	_ _		_ 1	l	! _ !	l	1_1	1	1 _ 1	
1	.	_ _		_		!_		1_1	1	_	l

BLANKS

Lab Name: ESE

Contract: NAVY

Lab Code: CCB,MB

Case No.:

SAS No.:

SDG.No.:

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L

1			·		<u></u>
	Initial Calib. Blank	Bl	ing Calibrat ank (ug/L)		 Prepa- ration
Analyte	(ug/L) C	1 C	2 C	3 C11	Blank C!! M
1 2 3				11	
Aluminum		!!			
Antimony		40.0 0	40.0101	1 1 1	40.0 U P
Arsenic			1_1_		
Barium				1_1	1 11
Beryllium:		<u> 1.3 U </u>	1.3 U		1.3 U P
Cadmium		<u> 3.0</u> <u>U</u>	3.0101	1_1_1	3.0 U P
Calcium		1_1			
Chromium	!!	<u>5.7</u> ! <u>U</u> !	<u>5.7 U </u>	1_1	5.7 U P
Cobalt				11	
Copper		<u> 5.8 U </u>	5.8 0	1_1	5.8 U P
<u>Iron </u>	!!!	12.0 0	12.0 0	1_1	12.0;U!!P
		<u>47.0 U </u>	47.0101		47.0 U P
Magnesium Manganese	!-!			1_1	
Mercury	!-!		_ _ _		111
Nickel !			!_!_	1_1	1_1_
Potassium		<u> 14.0 U </u>	14.0 0		14.0 U I P
Selenium	<u> </u>			11	1_1_1
Silver	;;;			111	1_1
Sodium		4.9	4.9 0		4.9 U P
Thallium !		<u> 59.7 U </u>	59.7 0	!!!	123.960 B P
Vanadium	!-!	<u> 176.0 U </u>	<u> 176.0 U _</u>	!_!!	176.0 U P
Zinc			!!_	!!_	1_1_1
Cyanide		<u>5.6 U </u>	<u> 5.6 U _</u>	!_!.	8.580 B P
	 '-¦				11
·	 '-'	iii_	;;;	111	1 11

ICP INTERFERENCE CHECK SAMPLE

Lab Name: ESE

Contract: NAVY

Lab Code: ICS Case No.: SAS No.: SDG.No.:

ICP ID Number: JA1100CLP ICS Source:

1	Tr	ue !	In	itial Found	1	 Final Found			
1	Sol.	Sol. !	Sol.	Sol.	1	Sol.	Sol.		
Analyte	A	AB !	A	AB	%R !	Α	AB	%R	
					. !			. ———	
Aluminum	!	i		!!			·	i	
Antimony		1000		1006.2	100.6	<u> </u>	996.7	99.7	
Arsenic	!				<u> </u>			ł	
Barium				.			! <u> </u>		
Beryllium	l	500	·		102.9		1 516.6	103.3	
Cadmium		1000		972.0	97.2		968.4	96.8	
Calcium				-			-	!	
Chromium	1	1000		1 1023.5	102.4		1034.8	103.5	
Cobalt				1			1	1	
Copper		500		495.4	99.1		1 499.1	99.8	
Iron		20000		1 19615.5	98.1		1 19608.9	98.0	
Lead		5000		1 4924.1			1 4628.6		
Magnesium				1			1	1	
Manganese		1		1			1	† ———	
Mercury				1			1	1	
Nickel		1000		953.2	95.31) 	968.6	96.9	
Potassium				1				!	
Selenium				1			1	!	
Silver		500		484.4	96.9		482.3	96.5	
Sodium		500001		1 48499.6			1 48938.5	97.9	
Thallium		1000		1 1013.3			987.0	98.7	
Vanadium				1				1	
Zinc		1000		980.5	98.0		982.4	98.2	
	!			1			1	1	

5A SPIKE SAMPLE RECOVERY

EPA SAMPLE NO.

Lab Name: ESE

Contract: NAVY

MW1S (MS)

Lab Code: SPM1

Case No.:

SAS No.:

SDG.No.:

Matrix (soil/water): WATER

Level (low/med):

% Solids for Sample:

0.0

	1	1							
i 	Control		i.					i -	
 Analyte	Limit	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	I I Q	M
: Aluminum	!		-¦		,-¦			¦-	<u> </u> -
Antimony		· :	-;		- ;			<u>-</u>	I P
Arsenic	Ì		-i		i-;			<u>'</u> —	<u> </u>
Barium	1		_ i		-			<u> </u>	
Beryllium	!		- 1		1-1			-	P
Cadmium	75-125	50.70001	_ ;	3.0000	Ū	50.00	101.4	1	P
Calcium	1		_		۱-۱			-	!—
Chromium			- _i		ı — I			1	! P
Cobalt	1	1	_!					! _	
Copper	1	1	_		ı ⁻ ı			_	! P
Iron	1	30878.7300	_ I	28803.8000	I_I	1000.00	207.5	1	P
Lead	1 75-125	527.50001	_	47.0000	١Ū١	500.00	105.5	[I P
Magnesium	1	l l	- 1					١_	
Manganese	1	1	_ ;					١_	
Mercury	1]	_		١٦١			_	1
Nickel	1	1	- ;		1 ⁻		l	_	P
! Potassium	1	[<u> </u>		I _ I	•	ł	!_	1
Selenium	1	1	_ {		-		!	ι_	!
Silver	1	1	_		I _ I			1	P
Sodium	75-125	33889.66001	<u> </u>	22696.5200	1_1	10000.00	111.9	!_	1P
Thallium	1]	<u> </u>		<u> </u>		!	!_	! P
Vanadium	1	1	_		1		1	1_	!
Zinc	1	!	<u> </u>		I_		!	1	! P
Cyanide	1		_		I_		[!_	;
1	1	1	_ 1		1-1		1	1	1

Comments:										
Commerce.										
		<u> </u>								
				,						

5A SPIKE SAMPLE RECOVERY

EPA SAMPLE NO.

Lab Name: ESE

Contract: NAVY

MW1S

Lab Code: SPM1 DISS.

Case No.:

SAS No.:

SDG.No.:

Matrix (soil/water): WATER

Level (low/med):

% Solids for Sample: 0.0

	Control			· · · · · · · · · · · · · · · · · · ·	!			! !	ļ !
Analyte	Limit %R	Spiked Sample Result (SSR) 	C	Sample Result (SR)	C	Spike Added (SA)	%R	i I Q	; M !
Aluminum			-;		1			<u> </u>	<u> </u>
Antimony		1	_ {					!_	1
Arsenic		1	_ ;		ı – ı			_	I
Barium			- 1		۱ ا			_	1
Beryllium		1	_ ;		۱ <u> </u>			Ι_	!
Cadmium	75-125	49.3100	_	3.0000	וַֿעַו	50.00	98.6	!_	IP_
Calcium		1	_		I		1	Ι_	!
Chromium			_ (I _ I		1	I_	I_
Cobalt		1	_		171			1	!
Copper		1	_ {		I_I			1_	!
Iron		25347.48001		23978.2200	I _ I	1000.00		1_	P
Lead	75-125	1 483.80001	_ !	47.0000	ا <u>ت</u> ا	500.00	96.8	1_	P_
Magnesium	1	1 1			1_1		}	1_	1
Manganese		1			_		1	!	I
Mercury		1			ı_ı			!_	I
Nickel			_		ı – ı		1	1	
Potassium		l			1 🗀			1	!
Selenium	1	1			1_1		l	1_	!
Silver	!	1			! _ !			1	I
Sodium	ł				1_1		1	!_	I
Thallium	ł	}	<u> </u>		1_1		l	1_	
Vanadium	l	1			ا <u>_</u> ا	1.5	1	1	1
Zinc	l				<u>ا _</u> ا		l	1_	1
Cyanide	{		-		1		1	!	1
	۱ <u> </u>	1	_	1	1		1		1

Comments:									
	 			· · · · · · · · · · · · · · · · · · ·					
·····	 					·	 		

5A SPIKE SAMPLE RECOVERY

EPA SAMPLE NO.

Lab Name: ESE

Contract: NAVY

MW1S

Lab Code: SPM2

Case No.:

SAS No.:

SDG.No.:

Matrix (soil/water): WATER

Level (low/med):

% Solids for Sample:

		Spiked Sample	: ! ! Sample	; ;	Spike		 	
Analyte	l %R	Result (SSR) C	Result (SR)	CI	Added (SA)	%R	ĮQ.	l M
Aluminum				-			i –	i —
Antimony				-,			-	I P
Arsenic				_			<u>,</u> –	_
Barium			1	_			<u></u>	_
Beryllium			1	-			i –	P
Cadmium	75-125	51.82001	3.00001	ŪI	50.00	103.6	<u>i</u> –	P
Calcium				- 1			1	$_{I}$
Chromium		1		- 1			1	P
Cobalt				-			_	_
Copper				-1				P
Iron		31008.38001	28803.80001	- 1	1000.00	220.5	ı [—]	P
Lead	75-125	547.61001	47.00001	ŪΙ	500.00		_	P
Magnesium	1	1		- 1			۱_	
Manganese	1			- 1			1	
Mercury		1	1	-1			_	
Nickel				- 1				P
Potassium				- 1		·	-	
Selenium		1		- 1			-	
Silver				- 1			-	P
Sodium	75-125	33612.66001	22696.52001	-1	10000.00	109.2	_	P
Thallium				- 1			ı —	P
Vanadium				-			1-	1
Zinc				-1			-	P
Cyanide				-1			1-	<u> </u>
				-1			-	

Comments:				
		 	74.0	

5A SPIKE SAMPLE RECOVERY

EPA SAMPLE NO.

Lab Name: ESE

Contract: NAVY

MW1S MS-D

Lab Code: SPM2 DISS.

Case No.:

SAS No.:

SDG.No.:

Matrix (soil/water): WATER

Level (low/med):

% Solids for Sample:

0.0

	· · · · · · · · · · · · · · · · · · ·	•					1	1	1
: !	 Control		1				1 !	1) [
		Spiked Sample	i s	ample	i	Spike	•	•	!
Analyte	8R			ult (SR)	C		%R	iQ	M
imatyce	!	!	!	(D11)		induca (Dii)	!	. <u>v</u>	1
Aluminum	<u> </u>	` <u> </u>	-		ı-		¦	<u>'</u> -	¦
Antimony	<u> </u>	·	-		<u></u>		!		<u>;</u> —
Arsenic	¦ ———	<u> </u>	-	·	<u>'</u> -			<u>'</u> -	¦—
Barium	<u> </u>	' ' -	-		i-i		<u>'</u>	-	<u>:</u> —
Beryllium	<u> </u>	[-		<u>-</u>		¦	<u>'</u> -	<u> </u>
Cadmium	75-125	49.0300	-	3.0000	in	50.00	98.1	-	P
Calcium	1 - 3 - 123	i	-	3.0000	ĭ		i	<u>;</u> –	; -
Chromium	!	ii -	- i		i-		<u> </u>	i^{-}	<u>;</u> —
Cobalt	1	<u> </u>	- ;		-			i-	;—
Copper	1	ii -	- i		<u> </u>		·	<u> </u>	<u>;</u> —
Iron		25338.47001	- 1 2	3978.2200	i-	1000.00	136.0	i ⁻	P
Lead	75-125	470.43001	- i -	47.0000		500.00		1	P
Magnesium			- i		i -		i	<u>i</u> -	;—
Manganese			-		1-]	<u></u>	<u> </u>
Mercury	1		-;		<u> </u>		<u> </u>	<u> </u> -	i —
Nickel					1-		1	1-	
Potassium	1	1	_		-			1	
Selenium	1	1	_ ,		, —		1	1 -	1-
Silver	1	1			1-		!	!	1
Sodium	1	1	_		1		1	1	
Thallium	1	1	_ ,		1-		1	}	1
Vanadium	1	1	_		1		1	_	
Zinc	1	1	-		1			1	1
Cyanide	1		- 1		1		1	ı —	!-
	1	1	-	· · · · · · · · · · · · · · · · · · ·	1		1	1	!

Comments:					

DUPLICATES

EPA SAMPLE NO.

MW2D

Lab Name: ESE

Contract: NAVY

Lab Code: RP Case No.:

SAS No.:

SDG.No.:

Matrix (soil/water): WATER

Level (low/med):

% Solids for Sample: 0.0

% Solids for Duplicate:

i	i	1 1		11	1 1 1	- 1	. !
		11		11	11	1	1
Limit :	Sample (S)	CII	Duplicate (D)	CII	RPD	Q! M	1 1
	1	_11		_ 11	!]	_	!
!	l	_		1_11	11	_	_1
1	- †	_		1 1	11	ΙP	<u> </u>
l	!			1 1	11	_	_
l	1			1 11	1 1	- _I -	_ I
	1			1 - 1 1		١P	l
1	3.0000	ΙŪΙΙ	3.0000	ווּטוּ	11	١P	_
	1	<u> </u>		1_11		.	_
1		<u> </u>		1-11		- I P	— <u></u>
1	1			1-11	11	_	<u> </u>
1	1	<u> </u>		1-11	11	- P	<u> </u>
1	23659.5400	1 1	23762.7100	$1^{-}11$	0.4	-¦P	_
	47.0000	ווטו	47.0000	1011	11	۱P	
ŧ	1	1 1		$1^{-}11$	11	_	_ ;
	1	1 1 1		1-11	11	_ ;	— ;
		1 1		1-11	11	_	_
		I <u>-</u> II		1711		- I P	_
1	1	1_11		1-11	11	- _I	_ I
1				1-11	11	_ ı	_ {
1		1711		1711	11	- <u>P</u>	_ ;
	41670.8500	1711	40633.3100	1^{-1}	2.511	- P	_ ;
1	1	1 11	-	1-11	11	- P	_
		1711		1-11	11	_ ;	_
		1-11		1-11	1.1	- P	- i
<u> </u>		1-11		1-11		-,-	— <u>`</u>
		1	·	'ı-'ı i		_ ;	
	Limit	Limit Sample (S) 3.0000 3.0000 47.0000 47.0000 1 1 1 1 1 1 1 1 1	Limit Sample (S) C	Limit Sample (S) C Duplicate (D)	Limit Sample (S) C Duplicate (D) C	Limit Sample (S) C Duplicate (D) C RPD	Limit Sample (S) C Duplicate (D) C RPD Q N P P P P P P P P P

DUPLICATES

EPA SAMPLE NO.

MW2D-0155 1

Lab Name: ESE

Contract: NAVY

Lab Code: RP DISS. Case No.:

SAS No :

SDG.No.:

Matrix (soil/water): WATER

Level (low/med):

% Solids for Sample:

% Solids for Duplicate:

0.0

	1		1 1				111	
	Control	! ! ! !	11		i i !!		11	i !
Analyte	Limit	Sample (S)	cii	Duplicate (D)	C	RPD	110	M
			11			1(1)	11	 !
Aluminum			,-; ;		'ı-'i		\	<u>'</u>
Antimony			1 11		1-11	***************************************	11	; —
Arsenic			1 1	· · · · · · · · · · · · · · · · · · ·	1-11		117	<u> </u>
Barium					1-11		ii^-	<u> </u>
Beryllium			1 1		1-11		11	1
Cadmium		3.0000	ווסו	3.0000	ווּטוּו		11	P
Calcium	.1		ı — ı ı i		1-11		11	
Chromium	ļ .		1 - 1 1		1-11		11	
Cobalt			1 1		i-ii		11-	i —
Copper			1711		1-11		11	!
Iron		2285.6600	1 11	2295.1600	1-11	0.4	11	l P
Lead	1	47.0000	וו שו	47.0000	ווּטוּ		11	! P
Magnesium			1-11		1-11		-	i —
Manganese			1-11		1-11		+	
Mercury	!		1 1 1		1-11		11	
Nickel	I		1 11		1-11		11-	
Potassium	-		1 11		1-11		11	
Selenium	1		1 1		1-11		11-	1
Silver			1 11		1-11		11-	
Sodium			1 1		1-11		11-	
Thallium	-		1 - 1 1		1-11		i i –	<u> </u>
Vanadium	1		i – i i		i = i		11-	i —
Zinc			-		i-i i		11-	
Cyanide	1		1-11	· · · · · · · · · · · · · · · · · · ·	1-11		11-	<u></u>
1 1	l		$(\Box \Box)$		1-11		111	!
		····	_					

LABORATORY CONTROL SAMPLE

Lab Name: ESE

Contract: NAVY

Case No.:

SAS No.: SDG.No.:

─ Solid LCS Source:

Aqueous LCS Source:

	·						
Aque	eous (ug/I	ا ا (ر					
True	Found	%R !	True	Found C	Lin	nits	%R
					1		1
500.0	506.95	101.4					!
<u> </u>	1	l		11_	!		<u> </u>
!				!!_	1		1
				ll_	!		
50.0	48.19	96.4		l l	ļ		·
					. I		l
200.0	203.00	101.5			l:	ł	1
				1	1		ł
250.0	250.26	100.1		l [1		1
1000.0	1032.12	103.2			1		1
500.0	504.76	101.0		l l	I		1
				1	1		;
		1		1	1		1
	1				1	1	1
400.0	395.42	98.9		1	1	l	1
	1	1		1	1 .		1
				!!	1	1	1
50.0	50.57	101.1		1	1	1	1
10000.0	10430.97	104.3		!	1	1	!
1000.0	1003.14	100.3					1
	1				1	1	1
200.0	212.54	106.3			1	!	!
	[1		l	1	*	!
	ļ	1		1 1	1	i	1
	50.0 50.0 50.0 200.0 200.0 1000.0 50.0 1000.0 1000.0	True Found 500.0 506.95 50.0 50.30 50.0 48.19 200.0 203.00 250.0 1032.12 500.0 504.76 400.0 395.42 50.0 50.57 10000.0 10430.97 1000.0 1003.14	500.0 506.95 101.4	True Found %R True 500.0 506.95 101.4 50.0 50.30 100.6 50.0 48.19 96.4 200.0 203.00 101.5 250.0 250.26 100.1 1000.0 1032.12 103.2 500.0 504.76 101.0 400.0 395.42 98.9 50.0 50.57 101.1 1000.0 10430.97 104.3 1000.0 1003.14 100.3	True Found %R True Found C 500.0 506.95 101.4 50.0 50.30 100.6 50.0 48.19 96.4 200.0 203.00 101.5 250.0 250.26 100.1 1000.0 1032.12 103.2 500.0 504.76 101.0 400.0 395.42 98.9 50.0 50.57 101.1 10000.0 10430.97 104.3 1000.0 1003.14 100.3	True Found %R True Found C Lin 500.0 506.95 101.4	True Found %R True Found C Limits 500.0 506.95 101.4

LABORATORY CONTROL SAMPLE

Lab Name: ESE

Contract: NAVY

Lab Code: SP2 Case No.:

SAS No.: SDG.No.:

Solid LCS Source:

Aqueous LCS Source:

		·.			*.			
! !	Ague	eous (ug/I	.)		Solid	(mg/kg)		
Analyte	True	Found	%R	True	Found C		nits	%R
Aluminum					1_	11		
Antimony	500.0	513.81	102.8					
Arsenic						1		
Barium				1	1			
Beryllium	50.0	50.30	100.6		1 1			1
Cadmium	50.0	48.75	97.5		1	1		
Calcium						1		l
Chromium	200.0	203.79	101.9		1	1 1		1
Cobalt :					1		-	l
Copper	250.0	245.84	98.3		1	1		ļ
Iron	1000.0	1024.08	102.4	l	!	1		1
Lead	500.0	525,19	105.0	1	1 1			!
Magnesium				1	- -	1 1		!
Manganese					1	1 !		l
Mercury			- 1	l	1			l
Nickel	400.0	394.88	98.7		1			ł
Potassium				!	1	1		1
Selenium								1
Silver	50.0	51.02	102.0					1
Sodium	10000.0	10083.49			1 1			1
Thallium	1000.0					1 7 1		1
Vanadium					1			1
Zinc	200.0	207.03	103.5			1		!
Cyanide				•	·	1		l
								1

DATA SUMMARIES

METALS,

NACDLB*1,4 & NACLDW1*14-16

Lab Name: ESE

COVER PAGE - INORGANIC ANALYSES DATA PACKAGE

Contract: NAVY

Lab Code: DA	Case No.:	SAS No.:	SDG.No.: NACDLB
SOW No. 7/88			+ NACLOW
	EPA Sample No. EQPBLK EQPBLK EQPBLK EQPBLKD FLDBLK FLDBLK FLDBLK FLDBLKS FLDBLKS FLDBLRS POTABL SW2 SW3 SW4	Lab Sample ID NALPB1*2 NALPB1*3 NALPB1*9 NACDLB*4 RP*NALPB1*2 NALPB1*1 NACDLB*1 SPM1*NALPB1*1 SPM2*NALPB1*1 NALPB1*8 NACLDW1*14 NACLDW1*15 NACLDW1*16	
Were ICP interal	ement corrections appl:		Was /Na W
			Yes/No Y
Were ICP backgrou	and corrections applied e raw data generated be	l?	Yes/No Y
application	of background correct:	ions?	Yes/No N
Comments:			
other than the co in this hardcopy	nis data package is in e contract, both techni onditions detailed above data package has been designee, as verified	ically and for comp ve. Release of the authorized by the	pleteness, for e data contained Laboratory Manager
Signature:		Vame:	5
Date:		Title:	
	COVER 1	PAGE - IN	

		INORGANIC	ا ANALYSIS DATA S	SHE	ET		EPA SAMPL	E N
						;	FLDBL	—— К
Lab Name: Es	SE		Contract: N	VAV	Y	1		
Lab Code: D	A	Case No.:	SAS No.	.:			SDG No.:	
Matrix (soi	l/water): W	ATER		L	ab Sa	mple	e ID: NACD	LB*
Level (low/	med):			D	ate F	Recei	lved: 02/2	5/9
% Solids:		0.0						
(Concentration	on Units (ug/	L or mg/kg dry	we	ight)	: UC	G/L	
	CAS No.	! Analyte	 Concentration	l I	Q	! ! M	-	
	17420 00	<u> </u>		!_!		_!_	_!	
		-5 Aluminum				_¦_	- ;	
		-0 Antimony -2 Arsenic		!-:		-¦-	-	
		-3 Barium				-¦-	- '	
	7440-41-			i-;		-;-	- '	
		-9 Cadmium		ו ט ו		一; p	- <u>i</u>	
		-2 Calcium		-		- i -	- <u>i</u>	
		-3 Chromium		1-1			-	
		-4 Cobalt		! - !		_ _	- 1	
	17440-50-	-8 Copper	1	1 1		_;	-	
	17439-89	-6 Iron	45.00	I <u>B</u> I	*	P	<u>-</u> 1	
	1 <u>7439-92</u>		1 47.00	<u> U</u> I		<u> P</u>	_1	
		-4 Magnesium		_!		_ !	_1	
		-5 Manganese		!_!		_	- !	
		-6 Mercury		!-!		_	_!	
		-0 Nickel		!-:		— <u>!</u> —	- !	
		-7 Potassium -2 Selenium	1	!-:		—¦—	- <u>i</u>	
		-4 Silver	1	!!		¦	- <u>i</u>	
		-5 Sodium	1	;-;		-;-	- ;	
	17440-28			i-:		-¦-	- <u> </u>	
	17440-62-		·	i-i		-i-	- }	
		-6 Zinc		i i		- i -	- ;	
		Cyanide		1		_ i _	-	
			1			_,_	-1	
							_	
Color Before	9:	Clari	ty Before:			T€	exture:	
Color After		Clari	ty After:			Aı	tifacts:	
Comments:								
· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·	······································						

	• .	INORGANIC A	1 ANALYSIS DATA :	SHE	EET		EPA SAMPLE NO.
Lab Name: ESE			Contract: 1	NAV	7Y	1	EQPBLK
Lab Code: DA	Ca	ase No.:	SAS No	.:			SDG No.:
Matrix (soil/w					1- 6		
				. 1	ab Sa	wbre	ID: NACDLB*4
Level (low/med):			Γ	Date R	ecei	ved: 02/25/91
% Solids:	0.0						
Con	centration (Jnits (ug/	L or mg/kg dry	we	eight)	: UG	/L
	l		 Concentration	 C _	Q	M	! !
	7429-90-5 7440-36-0 7440-38-2 7440-39-3	Antimony Arsenic		- - -			:
	7440-41-7 7440-43-9 7440-70-2	Beryllium Cadmium Calcium				P	
	7440-47-3 7440-48-4 7440-50-8 7439-89-6	Copper	108.38	!-! !-!	*	- - - - P	
	7439-92-1 7439-95-4 7439-96-5 7439-97-6	Lead Magnesium Manganese Mercury	47.00	-		P - - - - - - - - - -	,
	7440-02-0 7440-09-7 7782-49-2 7440-22-4	Potassium Selenium		!_! !_! !_!			! !
	17440-23-5 17440-28-0	Sodium Thallium Vanadium		;			
	7440-66-6	Zinc Cyanide					[]]
Color Before:		Clarit	y Before:			Te:	xture:
Color After:		Clarit	cy After:		•	Ar	tifacts:
Comments:			·				

		INORGANIC .	1 ANALYSIS DATA S	SHE	ET		EPA SA	MPLE NO.
			•			!	SW	2
Lab Name: ESE			Contract: 1	VAV.	Y	;		
Lab Code: DA	C	ase No.:	SAS No	.:			SDG No	.:
Matrix (soil/w	ater): WATE	R		L	ab Sar	nple	ID: N	ACLDW1 * 1
Level (low/med	1):			D	ate Re	ecei	ved: 0	2/21/91
<pre> § Solids:</pre>	0.	0						
Con	centration	Units (ug/	L or mg/kg dry	we	ight)	: UG	J/L	
	ICAS No.	! Analyte	 Concentration	I I	Q.	I M	1	
	7429-90-5			<u> </u> - -		_		
	17440-36-0					-!	1	
	1 <u>7440-38-2</u> 1 <u>7440-39-3</u>		1	<u>'</u> ':-		-¦	. !	
	17440-41-7			i-i		-;	·¦	
	17440-43-9	Cadmium	3.00	<u>ַנ</u> ו		P	1	
	17440-70-2			_		_	. !	
	17440-47-3	Chromium	!	!_!.	·	_!		
	7440-48-4		i	!-!-		-¦		
	17440-50-8 17439-89-6		250.44	<u>-</u> -	•	- <u>-</u>		
	7439-92-1		47.00	· · -		-¦ <u>-</u> -		
	7439-95-4			ië i		- ;	.	
	17439-96-5			i-i	· · · · · · · · · · · · · · · · · · ·	- <u>`</u> —	·	
	17439-97-6	Mercury	1	1-1		-		
	17440-02-0	Nickel	!	1 1		-	1	
	17440-09-7	Potassium	1	1 <u>_</u> 1			[1	
	7782-49-2	Selenium		!_!.		_!	. [
	17440-22-4 17440-23-5			<u>!</u> !-		-!-		
		Thallium	27,150,00	¦-¦-		- [유	.	
	7440-62-2		1	<u></u>		-¦	· <u>'</u>	
	17440-66-6		1	;-;·		-;	·¦	
		Cyanide		i-i-		-i	i	
	1			1_1			I	
Color Before:		Clari	ty Before:			Тє	xture:	
Color After:		Clari	ty After:			Ar	tifact	s:
Comments:								
· · · · · · · · · · · · · · · · · · ·					· · · · · · · · · · · · · · · · · · ·		•	· · · · · · · · · · · · · · · · · · ·
								
								

		INORGANIC A	1 ANALYSIS DATA S	SHEE'	г	EP.	A SAMPLE NO.
Inh Name CCE						ļ .	SW3
Lab Name: ESE			Contract: 1	NAVI		i	·
Lab Code: DA	C	ase No.:	SAS No	.:		SD	G No.:
Matrix (soil/w	water): WATE	R		La	b San	mple I	D: NACLDW1*1
Level (low/med	1):			Da	te Re	ceive	d: 02/21/91
% Solids:	0.	0				•	
Cor	ncentration	Units (ug/	L or mg/kg dry	wei	ght):	UG/L	
	1			1 1		 ,	
	CAS No.	! Analyte	Concentration	ICI	Q	M!	
	1 17429-90-5	: Aluminum		<u> -</u> -			
	7440-36-0		1	i-i-		-;;	
	7440-38-2			i-i-		-	
	17440-39-3		!	i-i-		-ii	
	17440-41-7			i - i -		-	
	17440-43-9		3.00	וֹטוֹ		P	
	17440-70-2		1	1-1-		- -	*
	17440-47-3			1-1-		1-1	
	17440-48-4	Cobalt		! ! !		- ₁ ₁	
	17440-50-8	Copper		1 1		1 1	
	17439-89-6		4329.99	*		IP I	
	17439-92-1	Lead		ַוֹעַוּ		P	
	17439-95-4	Magnesium	l	1_1_		_	
	7439-96-5	Manganese	ļ	 _ _		_ ! !	
	7439-97-6	Mercury		!_!_		_!!	
	7440-02-0			_ _		_!!	
	7440-09-7	Potassium		!_!_		_11	
	17782-49-2			!-!-		_!!	
				!-!-		-!!	
	7440-23-5		54,300.00	!-!-		<u> 12!</u>	
	7440-28-0		i	<u> </u>		-!!	
		Vanadium	i	!-!-		-::	
	7440-66-6		i	!-!-		-!!	
		Cyanide	†	<u> - -</u>		-	
	· · · · · · · · · · · · · · · · · · ·	·		' '		-''	
Color Before:		Clari	ty Before:			Text	ure:
Color After:		Clari	ty After:			Arti	facts:
Comments:							
							·
	<u> </u>				**		

	• •	INORGANIC .	l ANALYSIS DATA	SHI	EET	E	PA SA	MPLE NO
						1	SW	14
Lab Name: ESE			Contract:	7AN	JΥ	‡		
Lab Code: DA	Ca	ase No.:	SAS N	lo.:		s	DG No	.:
Matrix (soil/wa	ater): WATE	₹]	Lab Sam	ple	ID: N	ACLDW1 * 1
Level (low/med):		•	. I	Date Re	ceiv	ed: 0	2/21/91
% Solids:	0.0	כ						
Con	centration D	Inits (ua/	L or mg/kg dr	·v we	eight):	ug/	т.	
				7			- ,	
	CAS No.	 Analyte	 Concentratio	n C	Q	M		
	17429-90-5	i Aluminum	<u> </u>	-¦-		-¦¦		
	7440-36-0			-i-	'	-ii		
	17440-38-2		1	-		-1-1		
	7440-39-3			- 1-	l	1-1		
	7440-41-7	Beryllium	1			[1]		
	17440-43-9		13.00	<u> </u>	l	1 <u>P</u> 1		
	17440-70-2		1	_ ! _		-!!		•
	7440-47-3			_!_	l	_!!		
	7440-48-4			_!_		_		
	7440-50-8			_!_	!	-!!		
	17439-89-6		2898.00		*	-! <u>P</u> -!		
		Lead	47.00		i <u></u>	-! <u>P</u> _!		
	7439-95-4			-¦-	i	-¦¦		
	7439-96-5		!	-:-	i 	-: :		
	17439-97-6 17440-02-0			_ ;	¦	-		
	7440-02-0		<u> </u>	-;-	!	-;;		
	7782-49-2	Selenium	<u> </u>	-;-	! !	-¦¦		
	7440-22-4		!		!	-;;		
	7440-23-5		41.890,00	i	<u> </u>	ंच		
	7440-28-0		1	- i-	!	- -		
	17440-62-2		 	-i-	·	-ii		
	17440-66-6		1			-		
	!	Cyanide		_!_	!	-		
•	1		1	_;_	1			
Color Before:		Clari	ty Before:			Tex	ture:	:
Color After:		Clari	ty After:			Art	ifact	s:
Comments:								

2A INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: ESE

Contract: NAVY

Lab Code: ICV,CCV Case No.:

SAS No.:

SDG.No.:

Initial Calibration Source:

Continuing Calibration Source:

	Initia	l Calibra	tion :		Continuir	ng Cali	bration		!
Analyte	True	Found	%R(1)!	True	Found	%R(1)	Found	%R(1)	M
Aluminum			· ——- ¦					i	<u> </u>
Antimony !	1000.01	989.89	99.0	500.0	506.68	101.3	517.48	103.5	P
Arsenic	50.01		108.8	50.01		102.4		102.2	
Barium		1							
Beryllium:	1000.01	1007.20	100.7	500.01	512.74	102.5	504.60	100.9	; P
Cadmium !	1000.01	990.43	99.0	500.0					
Calcium									1
Chromium !	1000.01	1025.94	102.61	500.0	509.78	102.0	500.44	100.1	P
Cobalt !									1
Copper	1000.01	997.86	99.81	500.0	510.73	102.1	494.06	98.8	IP
Iron !	1000.0	1031.40	103.1	5000.0	5089.02	101.8	5015.72	100.3	l P
Lead	1000.0	1023.42	102.3	500.0	497.96	99.6	501.68	100.3	1P
Magnesium									1
<u>Manganese</u>	1			1					1
Mercury	5.0	4.92		5.0	4.75	95.0			ICV
Nickel	<u>1000.0</u> !	1015.88	101.6	500.0	507.85	101.6	506.38	101.3	I P
<u>Potassium</u>	<u> </u>		l1			1			1
<u>Selenium</u>	124.01	124.50		50.0	48.60	97.2	50.50	101.0	F
Silver	1000.01	1025.35	102.5	500.0	517.29	103.5	508.47	101.7	P
Sodium	10000.01	1067.00	106.7	5000.0	5210,00	104.2			1P
Thallium !	1000.0!	1050.11	105.0		713.78				I P
<u>Vanadium</u>	1		l						1
Zinc	1000.0	992.35	99.2	500.0	509.23	101.8	494.12	98.8	l P
<u>Cyanide</u>	t								1
¦;									1

⁽¹⁾ Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

2A INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: ESE

Contract: NAVY

Lab Code: AA/PB W Case No.:

SAS No.:

SDG.No.:

Initial Calibration Source:

Continuing Calibration Source:

 Analyte	Initia True	l Calibra			Continui					
immary ce	irue	Found	%R(1)!	True	Found	%R(1)	Found	%R(1)		M
Aluminum :			:i			!!			! <u> </u>	
Antimony						; <u>'</u>		<u>'</u>		
Arsenic			1			ii		<u>'</u>		
Barium !			·			·		<u>'</u>	¦ ¦-	
Beryllium						i		!	¦ ;-	
Cadmium !	I					i		!	¦ ¦ -	
Calcium !						ii	•	<u> </u>		
Chromium :	!					` <u> </u>		<u>'</u>	<u> </u>	
Cobalt						<u>`</u>		<u>;</u>	<u> </u>	
Copper						i			_	
Iron	1					i'		<u> </u>	<u> </u>	
Lead !	50.01	51.80	103.6	50.0	52.20	0.0	50 30	100.6		
Magnesium			1			i — i		100.0		<u>-</u>
Manganese						<u>; </u>		` <u> </u>	¦ ; -	
Mercury						i'		<u>'</u>	¦ ; -	
Nickel :						<u>`</u>		<u>'</u>	 -	
Potassium!						;;		<u> </u>	-	
Selenium	1			·					¦	
Silver :						i —— i		· ——	' -	
Sodium	1					<u>; </u>		<u>'</u>	 	
Thallium :				i		<u>'</u>			\	
Vanadium !			·			<u>; —— ; </u>		<u>'</u>	 	<u> </u>
Zinc	:					<u> </u>		i	:	
Cyanide	1		;	:		<u>'</u> ',		¦¦	¦	
	1			:		<u> </u> ;		; <u>:</u>	!	

⁽¹⁾ Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: ESE

Contract: NAVY

Lab Code: ICV, CCV Case No.:

SAS No.:

SDG.No.:

Initial Calibration Source:

Continuing Calibration Source:

1	· · · · · · · · · · · · · · · · · · ·				7-100			!	1
i	Initia	l Calibr	ation		Continuir	na Cali	bration	•	!
Analyte	True	Found	%R(1)		Found	%R(1)	Found	%R(1)¦	·
1		- 0		1200	104.14	-100	1 Cana	1	!
Aluminum			1					`i'i	<u> </u>
Antimony	1		1	500.01	502.90	100.6		ii	P
Arsenic			1	50.01		96.8		ì .	F
Barium			1	-				i i	1
Beryllium			1	500.01	517.40	103.5		1	IP
Cadmium	;		!	500.01			*		IP
Calcium			!	ŧ		l —— I		1 1	1
Chromium			!	500.01	510.45	102.1		1 1	P
Cobalt			1	1		!		1	1
Copper	{		1	500.01	507.97	101.6		11	I P
Iron			1	5000.01	5097.26	101.9		11	I P
Lead!			!	500.01	492.47			1 1	¦ P
Magnesium			!	1		 		11	-
Manganese	1		1					1	1
Mercury	;		1	10.0	9.82	98.2		1 1	ICV
Nickel			1	500.0				·	l P
Potassium			1	1		l		1	1
Selenium	;		1	50.01	50.30	100.6		ii	F
Silver	!			500.01				i — i	I P
Sodium	1	-	1		5090,00			1	17
Thallium !			1	700.01				'ii	P
Vanadium			1	-				ii	1
Zinc	1		1	500.01	504.72	100.9		·ii	P
Cyanide			1			1		` <u>'</u>	1
			1			i		·	i

⁽¹⁾ Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

2A INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: ESE

Contract: NAVY

Lab Code: AA/PB W

Case No.:

SAS No.:

SDG.No.:

Initial Calibration Source:

Continuing Calibration Source:

Concentration Units: UG/L

	Initia True	al Calibr Found	ation { %R(1);		Continuir Found	ng Cali %R(1)	bration Found	%R(1);	 M
Aluminum			·					, '	;
Antimony !			·					<u> </u>	1
Arsenic			·					i — i	
Barium		\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	1 1					1	1
Beryllium			1					1	1
Cadmium		}	1	1 1				1 1	1
Calcium			1						1
Chromium :			1 1						1
Cobalt !		1	1						1
Copper		1	1				·		<u> </u>
Iron			1						
Lead		1	1	50.0	50.30	100.6			F
! Magnesium !		1	1 :					1	
Manganese		}	1					;	
Mercury		1	1					1	1
Nickel		l	1			1			ı ı
Potassium		!	1						
Selenium		l	-					1	
Silver		1	1					-	
Sodium		!	1	1		!			i —
:Thallium		1							
Vanadium		ł	- 1	1		<u> </u>		,	
Zinc			1						
Cyanide		1	- 1					· [
1 1		!	1					<u> </u>	

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

3 BLANKS

Lab Name: ESE

Contract: NAVY

Lab Code: ICB,CCB

Case No.:

SAS No.:

SDG.No.:

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L

	· · · · · · · · · · · · · · · · · · ·		 				
					11		
}	Initial :				11		
1	Calib.		ing Calibra	ation	11	Prepa-	11
1	Blank !	Bl	ank (ug/L)		11	ration	. 11
Analyte	(ug/L) Cl	1 C	2 C	3	CII	Blank	CII M
!!					<u>.</u>	<u> </u>	11_ <u></u> _
Aluminum		!!	II		1_11_		1_11
<u>Antimony</u>	40.0101	40.0 IUI	40.0 U			40.0	IUIIP
Arsenic	2.6101	2.6101	2.6 0	2.6	-۱۱۵۱۱	2.6	U F
Barium !		<u> </u>	!]				1 1 1
Beryllium	1.3 0	1.3 0	1.3 0		1711	1.3	IUIIP
Cadmium !	3.0101	3.0 IUI	3.0 0		1 1 1	3.0	IUIIP
Calcium !			· · · · · · · · · · · · · · · · · · ·		1 1 1		1-11-
Chromium	5.7 0	5.7 ! Ū l	5.7 I U I		(5.7	IUIIP
Cobalt		1			ı [—]		1 1 1
Copper	5.8101	5.8101	5.8101		1-11-	5.8	UIIP
Iron	12.0 0	12.0 0	12.0 0		1-11-		IŪIIP
Lead	47.0101	47.0 U	47.0 0		1-11-		Ū P
Magnesium		! !			- -	:	1-11-
Manganese					1-11-		1-11-
Mercury		0.2 0			1 1 1	0.2	IUIICV
Nickel	14.0 0	14.0 0	14.0 U		i ⁻ i i-		IUIIP
Potassium		1 1			-		
Selenium	2.1101	2.1 0	2.1 0	2.1	11111	2.1	UIIF
Silver	4.9 0	4.9 0	4.9 0		i-ii-	4.9	
Sodium	60.0 101	10.0 IVI	60.0 10		i-;	60,0	
Thallium	176.0 0	176.0101	176.0 0		i-i i-	176.0	
Vanadium		i _ i	ii		i-; ;-	,,,,,	i ~ i i * - :
Zinc	5.6 0	5.6 I Ū I	5.6 I U I		i-i i-	5.640	BIP
Cyanide			i _ i		i-:::-	3.040	
	i-i	i-i-i			i- i i-		
			<u> </u>	'			

3 BLANKS

Lab Name: ESE

Contract: NAVY

Lab Code: AA/PB W

Case No.:

SAS No.:

SDG.No.:

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L

1									1		-	
 Analyte	Initial Calib. Blank (ug/L)	C	Cont:		uing Cali lank (ug/ 2		ation 3	C	Prepa- ration Blank	C !		M
Aluminum	•	:		. —				, — ¦	i	. – ¦	.i-	
Antimony !		<u> -</u> ;		¦ —	1	·¦-	<u> </u>	!-:	1	!-:	¦-	
Arsenic		!-:		<u>'</u> — '	1	-¦-	1	!-!		<u>.</u>	.i-	
Barium		!-:		<u> </u>	<u> </u>	·¦—	i	!-!	i	!-!	<u>:</u> -	
Beryllium		<u> -</u>		-	†	-¦-	1	!-!	<u> </u>	<u> </u>	ļ-	
Cadmium		;-;		<u>'</u>	<u> </u>	-	!	!-:	<u> </u>	!-!	ļ-	
Calcium		<u> -</u>		¦—	!	- ; —	!	!-!	<u> </u>	!-:	¦-	
Chromium		!-:		<u> </u> –	!	-	1	!-:	•	<u> </u> -	¦-	
Cobalt		¦-¦		<u> </u>		·¦	<u>'</u>	<u> -</u> ;		<u> </u> -:	¦-	
Copper		i-:		-		·¦-	!	-		<u>'</u> -:	¦-	
Iron		i-;		-		-;-	i	<u>'</u> -;		- :	<u>'</u> -	
Lead	2.0	. TT :	2.0	<u> </u>	2.0	177		;-;	2.0		İĪ	
Magnesium		<u>, </u>		ĭŤ		·¡∸		i-;	1 2.0	ΪΞΪ	1=	-
Manganese		i - i			<u> </u>	<u>;</u> —	i	-		i-;	i-	
Mercury		i – i		-		-	!	i-i		i-;	j-	
Nickel		1-1				1-		- 1		i – i	i-	
Potassium		1-1		۱_	1	-	!	1-i		- 1	į-	
Selenium		1-1		ι_	1	!_	1	1-1		_ `	-	
Silver		ı [—] ı		!	1	.	1	1-1		-	1	
Sodium		1-1		!	1	Ι_	1				i-	
Thallium		(I		·	1	1	1	1-1	1	-	-	
Vanadium		I_I		١	1	1	1	1-1	1	- i	-	
Zinc		1_1		!_	:	,-	1	1-1	1	-		·
Cyanide		I_I		I_	1	!	1	 	!	! - !	1	
1		1_1		!_		1	1	1 1	•	; ⁻ ;	1	

ICP INTERFERENCE CHECK SAMPLE

Lab Name: ESE

Contract: NAVY

Lab Code: ICS Case No.:

SAS No.: SDG.No.:

ICP ID Number: JA1100CLP

ICS Source: ESE

		- 1			<u> </u>			
1	T	rue !	In	itial Found	1		Final Foun	d i
1	Sol.	Sol.	Sol.	Sol.		Sol.	Sol.	
Analyte	Α	AB 1	A	AB	%R	A	AB	%R 1
l!		1						{
Aluminum		11					1	
Antimony		1 10001		1020.2	102.0		1030.9	1103.1
Arsenic !		!!					1	
Barium		11	-,			1	!	
Beryllium:		1500		517.3	103.5		532.4	1106.51
Cadmium		1000		1000.9	100.1	1	1033.7	1103.41
Calcium !		11					l	1
Chromium :		10001		1038.1	103.8		1 1065.1	106.5
Cobalt !		1 1					1	1
Copper		5001		491.1	98.2		494.9	1 99.01
Iron		1 200001		19651.8			1 19954.2	
Lead!		50001		5211.3				1106.51
Magnesium							1	1
Manganese		1 1					1	
Mercury							i	
Nickel		1000:		976.6	97.7		1007.4	100.7
Potassium		1				 	1	1
Selenium		1					!	
Silver		5001		505.1	101.0		516.2	1103.2
Sodium		500001		48290,0		***		
Thallium !		10001		992.4			1066.5	106.6
Vanadium							1	1
Zinc		1 10001		999.7	100.0		1017.0	101.7
1;							1	1
						· ———	·	·

EPA SAMPLE NO.

Lab Name: ESE

Contract: NAVY

FLDBLKS (M c)

Lab Code: SPM1

Case No.:

SAS No.:

NALPBIX

.

Matrix (soil/water): WATER

Level (low/med):

% Solids for Sample:

0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

Aluminum	
Limit Spiked Sample Sample Spike	
Analyte %R	
Aluminum	.,
Antimony 75-125 506.5200 40.0000 U 500.00 101.3 F	M
Antimony 75-125 506.5200 40.0000 U 500.00 101.3 F Arsenic 75-125 22.3000 2.6000 U 20.00 111.5 F E E E E E E E E E	
Arsenic	
Barium	<u> </u>
Beryllium 75-125 49.9100 1.3000 U 50.00 99.8 F	7_
Cadmium 75-125 52.5300 3.0000 U 50.00 105.1 F Calcium	
Calcium	<u>P</u>
Chromium 75-125 209.1600 5.7000 U 200.00 104.6 E Cobalt	2
Cobalt	
Copper 75-125 251.3400 5.8000 U 250.00 100.5 E I I I I I I I I	P
Iron	
Lead	P
Lead	P
Magnesium	P
Manganese	
Mercury 75-125 4.8349 0.2 U 5.00 96.7 0	ZV
	P
Potassium	_
Selenium 75-125 22.4000 2.1000 U 20.00 112.0	F
	P
10-37	ø
'Thallium !	<u> </u>
Vanadium	
	P
Cyanide	<u>-</u>

Comments:

FORM V (Part 1) - IN

EPA SAMPLE NO.

Lab Name: ESE

Contract: NAVY

FLDBLKS/

Lab Code: AA/PB W

Case No.:

SAS No.:

Matrix (soil/water): WATER

Level (low/med):

% Solids for Sample: 0.0

1			<u>-</u>		1				
· · · · · · · · · · · · · · · · · · ·	Control		1		i			1 1	. i
; !		Spiked Sample		Sample	•	Spike	l I ·	1 1	
 Analyte	%R	Result (SSR)	C		C		%R	0	M
! Analyce !	. •1	i vezair (22v)		Result (DA)	ı .	Added (SA)	i ok	יעי יעי	111
Aluminum			- ;		-;			<u>'</u> -	<u> </u>
Antimony			-;		 -;			<u>'</u> -	ˈ ˈ
Arsenic			-		¦			-	<u>'</u>
Barium			-;		-		<u> </u>	<u>;</u> –	<u>'</u>
Beryllium			-;		<u>'</u> -'			<u>'</u> -	<u>'</u>
Cadmium			-;				¦	;-	<u>'</u>
Calcium			-;		<u>'</u> -;		<u> </u>	-	<u>'</u>
Chromium			-;		<u>; – ;</u>		<u> </u>	<u>;</u> –	<u>'</u>
Cobalt			-;		-:		·	<u>;</u> –	<u>'</u>
Copper	-		`-;		<u>`</u> -;		·	<u> </u>	<u> </u>
Iron			[– <u>]</u>		i – i		· !	i-	<u>-</u>
Lead	75-125	23.0000	_	2.2000	B	20.00	104.0	<u>i</u> -	F
Magnesium			-		_		1	1	<u> </u>
Manganese			-		-			1	
Mercury		1	-		!-!	1	:		1
Nickel					(- i		-	1	1
Potassium		1	ı ⁻ :		1-		·		ı —
Selenium		1			; - ;		!	! -	!
Silver		1	ı – ı		1-		1	1	!
Sodium	l	1	1-1		-		1	1-	1
Thallium	}	1	1-1		1		1	1	!
Vanadium		1	,-,	· · · · · · · · · · · · · · · · · · ·	-		1	1-	
Zinc	1	1	1-1		1 - 1	·	1	1	<u> </u>
Cyanide	1		1-		-		1	<u> </u> -	-
1	!		ı — ;	 	!-		1	-	!-

Comments:			

EPA SAMPLE NO.

Lab Name: ESE

Contract: NAVY

FLDBLKS

Lab Code: SPM2

Case No.:

SAS No.:

VALIBI⊀I SDG.No.:

Matrix (soil/water): WATER

Level (low/med):

% Solids for Sample:

0.0

1	1		7						
1	Control		1			ŧ	•		1
1		Spiked Sample	1	Sample	. !	Spike !	· "		1
Analyte	¦ %R	Result (SSR)	C I	Result (SR)	CI	Added (SA)!	%R	Q	M!
l	l	l	1		1	!	!		
Aluminum	!		_ 1					-	
Antimony	75-125	493.0900	_ {	40.0000	וַעַוּ	500.00	98.6		P
Arsenic	1 75-125	22.3000	_	2.6000	ו <u>ט</u> ו	20.00	111.5	_	F
Barium	ł		_		_			_	
Beryllium			- !	1.3000	ו 🗓 ו	50.00	99.8		P
Cadmium	75-125	51.62001	_ ;	3.0000	١Ū١	50.00	103.2	-	P
Calcium	l		- ;					-	ı — ı
Chromium	75-125	208.65001	_ ;	5.7000	Ū	200.00	104.3	-	P
Cobalt	1		_ ;			-		-	
Copper	75-125		− ¦	5.8000	۱ ۱	250.00	101.4	-	P
Iron	75-125	1014.16001	_ ;	12.0000	ו 😈 ו	1000.00	101.4	-	P
Lead	1 75-125	491.77001	_	47.0000	ו 😈 ו	500.00	98.4	-	P
Magnesium			_ :		۱ ا			_	ı — ı
Manganese			_ :					-	
Mercury	1 75-125	4.9217	_	0.2	ו 🗓 ו	5.00	98.4	-	CV
Nickel	l <u>75-125</u>	394.52001	_ :	14.0000	١Ū١	400.00	98.6	-	P
Potassium		1	- ;		۱-۱			¦ —	
Selenium	1 75-125		-;	2.1000	١Ū١	20.00	112.5	1	$\overline{\mathbf{F}}$
Silver	1 75-125	47.06001		4.9000	۱ ۵ ۱			-	\overline{P}
Sodium	175-125	10330,00001	_;	242.4000	۱ - ۱	10,000	100.9	ı — :	9
'Thallium	1	1	_ ;					_	
<u>Vanadium</u>	!		_;		1 - 1			_	
Zinc	1 75-125	208.7400	-;	8.8300	B	200.00	100.0		P
Cyanide	1	1	_¦		-				
!		1	_		ı- i			ı —	

Comments:				
Commencs.				

EPA SAMPLE NO.

Lab Name: ESE

Contract: NAVY

FLDBLKS (MS/D)

Lab Code: AA/PB W

Case No.:

SAS No.:

SDG.No.:

Matrix (soil/water): WATER

Level (low/med):

% Solids for Sample:

0.0

	1								
; ; }	 Control Limit	¦ ¦Spiked Sample	i !	Sample	; ;	Spike		; ; ! ; } ;	. i
Analyte	! %R !	Result (SSR)	C		CI		! %R !	Q l	М
Aluminum	<u>'</u>		-		ı — i		<u> </u>	i-i	_
Antimony	·		-				i	-	
Arsenic	[-		_ _		!	-	
Barium			-		-		1	1-1	
Beryllium		1	-		-		1	-	
Cadmium	!		-		!-!		l :	1-1	
Calcium	1	1	-		ı-ı		‡	1-1	_
Chromium	1	1	-		ı – ı		F	1-1	
Cobalt	1		-		۱ - ۱		!	1-1	
Copper	1	1	; - ;		۱-۱		1	1-1	
Iron	1	1	! _		: ⁻	l .	1	1_1	
Lead	1 75-125	19.8000	<u> </u>	2.2000	ŀ₿ŀ	20.00	1 88.0	1_1	F
Magnesium	1	1	! _ !	l	<u> </u>	1	1	1_	l
Manganese	1	1	-		;	l	1	1_1	ı
Mercury	1	1	!	1	ا []		1	!	1
Nickel	1	1	!		! [1	!	ı
Potassium	1		_		! -			1	1
Selenium	1		!		ا_!		1	!_	!
Silver	1		١_		<u> </u>	1	1	!	!
Sodium	!	1	!	!			1	;	!
Thallium	[<u>ا_</u>		۱	ļ	1	;_	1
Vanadium	1	1	۱ <u> </u>	i	!_:	1		1_	!
Zinc	1		١_		; ⁻	!		1	1
Cyanide	1		١ <u> </u>	1	1_	ŧ		!_	!
1	1		;		ι_	1	!	!	!

Comments:		
		

6 DUPLICATES EPA SAMPLE NO.

EQPBLKD

Lab Name: ESE

Contract: NAVY

INALIBIAZ-RP

Lab Code: RP

Case No.:

SAS No.:

SDG.No.:

Matrix (soil/water): WATER

Level (low/med):

% Solids for Sample:

0.0

% Solids for Duplicate:

0.0

	1	11		11	and the second s	-	1	11	<u> </u>
-		1 -	,	. 1.1		1	1	11	}- }
Analyte	Limit		Sample (S)	CII	Duplicate (D)	CI	RPD	l lQ	M
1	l{	∷_		1		_	t	11_	ا <u></u> ا
:Aluminum		۱۱_		_ 1		1_1	l	11_	lI
Antimony	l	!!_	40.0000		40.0000	۱ <u> ت</u> ا	1	11_	P
Arsenic			2.6000	<u></u> <u> </u>	2.6000	1 <u>0</u> 1	l	H	<u>F</u>
Barium	l{	11_		_			1	L1_	ll
Beryllium	ll	_	1.3000	ווּעוֹ	1.3000	IŪI	{	11	P
Cadmium	l		3.0000	ប៊ីដ	3.0000	١Ū١	1	11	P
!Calcium	1	[171		П.	11
Chromium	1	-	5.7000	ŪΗ	5.7000	IUI	1	11	P
Cobalt		-				'-'	1	11	ı—,
Copper		l 1 ⁻	5.8000	បីរ	5.8000	וּטוּ	1	11	IP I
Iron	100 !	115	222.6700		402.6700	1-1	1 57.6	! *	IP I
Lead		-	47.0000	បីរ	47.0000	וּטוּ	1	11	P
Magnesium		: I ⁻				1-1	1	11	ı — ı
Manganese	1	l 1		-		1-1	1	11	ı — ı
Mercury		۱۱-	0.2	ועו	0.2	101	1	11	ICV
Nickel		-	14.0000		14.0000	101	1	11-	P
Potassium		۱۱ ٔ		-11	i	1-1	1	11	11
Selenium	1	۱۱ -	2.1000	ו ַ ָּעַ	2.1000	IUI	!	11	F
Silver	1	۱۱ ⁻	4.9000			101	}	11-	P
Sodium	125000	-	723,2000		327.6000	Ť	1.4	i i-	i r
Thallium	!	-	176.0000		176.0000	101		ii^-	P
Vanadium	!	۱:		, <u> </u>		· i ·	1	ii^-	i — i
Zinc	1	-	8.8800	BI	6.9200	1B1	24.8	11-	P
Cyanide		-		-		·i=;	1	. i-	<u>, — </u>
1	1	: 1-		-		· -	1	i^{-}	ii
	 `	· · -				- '	•	· ' —	· '

DUPLICATES

EPA SAMPLE NO.

EQPBLKD

Lab Name: ESE

Contract: NAVY

Lab Code: AA/PB W Case No.:

SAS No.:

Matrix (soil/water): WATER

Level (low/med):

% Solids for Sample:

% Solids for Duplicate:

Control Sample (S) C Duplicate (D) C RPD Q M							
Analyte				11		11	
Aluminum		Control !!		1.1		- 11	
Antimony Arsenic Barium Beryllium Cadmium Calcium Chromium Cobalt Copper Iron Lead 3 2.0000 U 3.8000 200.0 * F Magnesium Manganese Mercury Nickel Potassium Selenium Silver Sodium Thallium Th	Analyte	Limit	Sample (S)	CII	Duplicate (D)	CII	RPD Q M
Antimony Arsenic Barium Beryllium Cadmium Calcium Chromium Cobalt Copper Iron Lead 3 2.0000 U 3.8000 200.0 * F Magnesium Manganese Mercury Nickel Potassium Selenium Silver Sodium Thallium Th	1	! <u></u>		11		11	11-1
Arsenic Barium Beryllium Cadmium Cadmium Calcium Chromium Cobalt Copper C				1711		-,-,,	
Barium	Antimony	1		-1-11		-,-,,	
Beryllium	Arsenic			51 - 111		-,- -	
Cadmium	Barium		:	-1-11		- -	
Calcium				1-11		7711	
Chromium		l		aTu'		1711	
Copper		!! ! !		-iii		-1-11	
Copper		l <u> </u>		71 11		1711	
Iron				[] [] []			
Lead 3 2.0000 U 3.8000 200.0 I* F Magnesium Image:		l				1-11	
Magnesium Manganese Mercury Nickel Potassium Selenium Silver Sodium Thallium						1-11	
Magnesium Manganese			2.0000	֓֞֞֞֜֞֜֞֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓	3.8000	1-11	200.0 * F
Mercury Nickel Potassium Selenium Silver Sodium Thallium				1-11		-1-11	
Nickel		¦{				1-11	
Potassium				1 1		-1-11	
Selenium		1 !		-1-11		1.11	111
Silver	Potassium			-ı-ıı		-111	
Sodium				-1-11		-1-11	
'Thallium'				-i_ i i		-1-11	1111
				-1-11	· ·	-,-,,	
Vanadium				7-11		-1-11	
	Vanadium			-,-,,		-1-11	
Zinc		1		1 1		-,-,	
Cyanide	Cyanide			1-11		-11	
' <u> </u>	!			[1		-,-', ,	

7 LABORATORY CONTROL SAMPLE

Lab Name: ESE

Contract: NAVY

Lab Code: SP1

Case No.:

SAS No.:

SDG.No.:

Solid LCS Source:

Aqueous LCS Source:

							1		
	3								
j 13 1	Aqueous (ug/L)			Solid (mg/kg)					
Analyte	True	Found	%R ¦	True	Found	С	Limits	%R	
Aluminum !			·i	<u> </u>			······································	_,	
	500.0	402 52	i		!i	_!	i	_ <u> </u>	
Antimony		483.53			!———!		i	—! ——	
Arsenic	20.0	22.10	110.5		ii			i	
Barium !	i	40.74			!!	!	<u> </u>	<u>`</u>	
Beryllium					<u> </u>	_!		!	
Cadmium	50.0	46.38	92.8		!	_!	<u> </u>	_ !	
Calcium	i				<u> </u>	!		!	
Chromium !	200.0	205.07	102.5		!!	_!		!	
Cobalt !	!				<u> </u>	_ !		_!	
Copper	250.0					_!		!	
Iron !	1000.0					 _	<u> </u>	!	
Lead !	500.0!	497.20	99.4		1	'_'	I	_'	
Magnesium	1			<u> </u>		_	l	!	
Manganese	!				l	 			
Mercury	5.0		105.4	<u> </u>		 	t	!	
Nickel	400.0	389.75	97.4		1	<u> </u>	[!	
Potassium					1	l	<u> </u>	!	
Selenium	20.0		112.5		1		1		
Silver	50.0	42.86	85.7		1	I, I	1	1	
Sodium	10000101	10120,00	101.2	L	1		· · · · · ·	ŧ	
Thallium :	I				1		1	_ ;	
Vanadium							· [_,	
Zinc	200.01	211.02	105.5	l .	1			_	
Cyanide				1	1		· · · · · · · · · · · · · · · · · · ·	-;	
				ł	1	-	i		

LABORATORY CONTROL SAMPLE

Lab Name: ESE

Contract: NAVY

Lab Code: AA/PB W

Case No.:

SAS No.:

SDG.No.:

Solid LCS Source:

Aqueous LCS Source:

. —————————————————————————————————————					·	
		ous (ug/L)			(mg/kg)	<u>.</u> .
Analyte	True	Found %I	R ! True	Found C	Limits	%R
Aluminum		1.	<u> </u>	-,		
Antimony :		<u> </u>	<u>-</u>	-	<u>'</u>	
Arsenic	 :::	<u> </u>	— ¦ ————	-	t i	······································
Barium		<u> </u>	i	-	<u> </u>	<u> </u>
Beryllium	 -	<u> </u>		-	ii	<u>-</u>
Cadmium	<u></u> '-			-	<u>'</u>	<u>'</u>
Calcium	 ¦-	 -			<u>'</u>	······································
Chromium	<u>-</u>			-	!	
Cobalt		<u> </u>		-¦	<u> </u>	
Copper				-	<u> </u>	<u> </u>
Iron		i	!	-¦'	<u>'</u>	
Lead	20.0	19.40: 97		-	<u>'</u>	
Magnesium		1	<u> </u>	- <u>i</u> i	<u> </u>	<u>;</u>
Manganese	i	<u> </u>	i	- [` <u></u> `	<u>'</u>
Mercury				- <u>;</u>	<u>'</u>	
Nickel		<u> </u>		- <u>i i</u>	<u>'</u>	
Potassium!				-;	<u>i</u>	i
Selenium	i			- i i	i i	
Silver	1			-ii-	i i	
Sodium !				- i i	i — i — i — i	· · · · · · · · · · · · · · · · · · ·
Thallium :	<u> </u>			- i	i	· · · · · · · · · · · · · · · · · · ·
Vanadium				-	1	<u> </u>
Zinc				- i i -		i
Cyanide :	1		1	- i i -	i	i -
!	1			·		